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Revision of the Nearctic *Eratigena* and *Tegenaria* species (Araneae: Agelenidae)

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Abstract. Based on specimens from several museum collections and recently sampled spiders during a field excursion to Mexico in 2014, the 11 species of *Tegenaria* s. l. endemic to the United States of America and Mexico are revised. Morphological characters and mitochondrial DNA sequences (CO1, NADH1, 16S) serve as the basis for proposed new combinations and new species. *Tegenaria chiricahuae* Roth, 1968 remains the only endemic *Tegenaria* species in the Western Hemisphere. All other specific names (*T. blanda* Gertsch, 1971, *T. caverna* Gertsch, 1971, *T. decora* Gertsch, 1971, *T. flexuosa* F.O. Pickard-Cambridge, 1902, *T. florea* Brignoli, 1974, *T. gertschi* Roth, 1968, *T. mexicana* Roth, 1968, *T. rothi* Gertsch, 1971, *T. selva* Roth, 1968, and *T. tlaxcala* Roth, 1968) are transferred to the genus *Eratigena* Bolzern, Burckhardt & Hänggi, 2013. Six new species are described: *E. edmundoi*, *E. fernandoi*, *E. guanato*, *E. queretaro*, *E. xilitla*, and *E. yarini*. In addition, females of *E. flexuosa*, and *E. gertschi*, and the male of *E. florea* are described for the first time. A phylogeny based on maximum likelihood analysis of combined mtDNA sequences, an identification key and images of all diagnosed species are provided.

Keywords: *Eratigena*, mtDNA, new combination, new species, morphology

http://zoobank.org/?lsid=urn:lsid:zoobank.org:pub:4F518AA0-7745-403A-9EDF-A84622E9BEB7

Among the 114 known spider families, the Agelenidae comprises more than 1,160 described species and ranks as the 11th most diverse group (World Spider Catalog 2015). Due to the obvious funnel-webs produced by many species, some of them are well known: for example, the large, long-legged European house spider (*Eratigena atrica* (C.L. Koch, 1843), formerly *Tegenaria atrica*), or the American grass spiders (*Agelenopsis* Giebel, 1869; 13 species). However, new species are still being discovered frequently (Bolzern & Hervé 2010; Bolzern et al. 2009, 2013a, b; Bosmans 2011; Maya-Morales & Jiménez 2013). Our knowledge of the taxonomy and phylogeny of this spider group has fundamentally improved in recent years (Bolzern et al. 2010, 2013a; Miller et al. 2010), and currently the family can be divided into two subfamilies. Ageleninae generally shows a Holarctic distribution, but includes five genera found only in the Afrotropical (two genera) or the Neotropical (three genera) region. One of these genera was first described in 2013 with six new species and is only known from the Baja California peninsula in Mexico (Maya-Morales & Jiménez 2013). The second subfamily, Coelotinae, forms a Holarctic lineage most diverse in Asia, with only two genera exclusively in North America.

The subfamily Ageleninae includes the genus *Tegenaria* s. l., composed of species endemic to the Palearctic or Nearctic regions. The European representatives of this genus were recently revised and grouped in four monophyletic genera (Bolzern et al. 2010, 2013a): *Aterigena* Bolzern, Hänggi & Burckhardt, 2010, *Eratigena* Bolzern, Burckhardt & Hänggi, 2013, *Malthonica* Simon, 1898, and *Tegenaria* Latreille, 1804. The generic affiliation of the 16 Nearctic species is resolved only for the presumably introduced European species, but not for the 11 endemic species. Roth (1952) published the first revision of *Tegenaria* in North America. His original hypothesis, that all *Tegenaria* s. l. species were introduced into the Western Hemisphere from Europe (Roth 1956), was refuted after the discovery of endemic species from Mexico and Arizona (Roth 1968). After that, additional endemic species were described by Gertsch (1971) and Brignoli (1974). In his work, Brignoli noted that this species-complex was extremely problematic due to a lack of images, the very close relationships of the involved species and a lack of diagnostic features. Furthermore, until now, four species were described by one sex only. In view of these complexities and the high proportion of introduced species, a taxonomic clarification is essential for further research or nature conservation approaches.

Therefore, the aims of this paper are threefold: firstly, the taxonomical clarification of the endemic Nearctic and Neotropical *Tegenaria* s. l. species and the publication of images of all endemic taxa; secondly, the description of newly discovered forms or species; and finally, the provision of mitochondrial gene sequences for certain species.

METHODS

Sampling and material examined.—Type specimens (including all type material) and additional material mentioned below were examined from the following institutions: American Museum of Natural History, New York, United States (AMNH: Norman Platnick, Lorenzo Prendini, Luis Sorkin); Biología Comparada, Taxonomía y Sistemática de Araneomorphae, Universidad Nacional Autónoma de México, Mexico (FC-UNAM: Fernando Alvarez Padilla); Colección Nacional de Arácnidos, Instituto de Biologia, Universidad Nacional Autónoma de México, Mexico (CNAN: Oscar Francke, Diego A. Barrales); Museo Civico di Storia Naturale, Verona, Italy (MCSNV: Roberta Salmaso); Muséum National d'Histoire naturelle, Paris, France (MNHN: Christine Rollard); Naturhistorisches Museum Basel, Switzerland (NMB); and The Natural History Museum, London, Great Britain (NHM: Janet Beccaloni). To all specimens examined (excluding existing type material), an identifier was added to the vial (e.g., AB1234). Newly collected specimens are shared between FC-UNAM and the NMB. For the collection at the NMB, official collection numbers are provided (e.g., NMB-ARAN-12345). Barcoding sequences (CO1 and NADH1) are referenced to the adequate specimens by providing the GenBank accession-number following the identifier.

In addition to the museum collections, specimens were sampled during a field excursion to Mexico in October 2014 (A. Bolzern and E. González Santillán). All specimens were collected by hand and transferred directly into pure ethanol.

Distribution maps or single references of all georeferenced specimens are available on the scratchpads platform, online at http://agelenidsoftheworld.myspecies.info/specimen_observation. In addition, downloadable high resolution images of representatives of the included species are available on the same website (Bolzern 2014).

Molecular methods and analyses.—For DNA extractions, two legs were removed from a freshly sampled and alcohol-fixed (pure ethanol) specimen. The ethanol was removed by incubating the cut tissue at 56°C for 10 min. Then the leg was processed according to the protocol for the purification of total DNA from animal tissues (Spin-Column protocol) using the DNeasy Blood & Tissue Kit (Qiagen). The DNA concentration of the resulting solution was measured using the fluorescent dye Picogreen and a Spectrofluorometer. Polymerase chain reaction (PCR) amplification of two loci was undertaken by using the following primer pairs: LCO1490 (Folmer et al. 1994) and C1-N-2191 (Simon et al. 1994) for the mitochondrial cytochrome c oxidase subunit 1 gene (CO1, 678 bp), and TL-1-N-12718 (Hedin & Maddison 2001; numbered following Simon et al. 1994) and M510 (Murphy et al. 2006) for the mitochondrial nicotinamide adenine dinucleotide dehydrogenase subunit 1 (NADH1, 591 bp). For PCR, the Qiagen Hotstar polymerase reagents (Qiagen, Germany) were used. The following thermo cycling conditions were applied: initial denaturation step of 95°C for 15 min, followed by 15 touchdown cycles of: 94°C for 35 s, an annealing temperature of 60°C to 45°C for 90 s, and an extension temperature of 72°C for 90 s. After the touchdown cycling 30 additional cycles were added at 94°C for 35 s, 50°C for 90 s, and 72°C for 90 s. Finally, the cycling was followed by an additional extension of 72°C for 5 min. To eliminate incorporated nucleosides and primers, the PCR products were treated with ExoSAP-IT (GE Healthcare). The fragments were then sequenced in both directions using an ABI PRISM BigDye Terminator Cycle Sequencing Ready Reaction Kit (Applied Biosystems). Sequences were then analyzed using an ABI Prism 3730 Genetic Analyzer.

Each sequence was proof-read by checking the chromatograms by eye using the software FinchTV v. 1.4 (Geospiza Inc.). The complementary sequences (5′ and 3′ directions) of each specimen were aligned using ClustalW 2 (Larkin et al. 2007) on the EBI website (Li et al. 2015) to test the sequence quality. Each sequence was checked for contamination by using the 'Basic Local Alignment Search Tool' (BLAST) on the NCBI website. The alignments of the mitochondrial gene regions were carried out manually, using the translation to amino acids as a guide and checking for any inappropriately placed stop codons and insertions or deletions. All sequences were then cut to a length of 678 bp (CO1) or 591 bp (NADH1). Within these two alignments no indels or stop codons occurred.

In addition to the protein coding markers, GenBank was searched for 16S sequences of already included taxa. In favor of repeatability and objectivity, the 39 adequate sequences were aligned by using a fixed automatic alignment instead of manually edited alignments or alignments based on secondary structures. Therefore, multiple sequence alignments were carried out using the software package Opal (Wheeler & Kececioglu 2007) implemented in Mesquite (Maddison & Maddison 2015), applying the default parameters (A<–>G: 56; C<–>T: 53; transversions: 100; gap costs: open: 260; terminal open: 100; extension: 69; terminal extension: 66).

The three alignments were concatenated using Mesquite, resulting in an alignment comprising 103 taxa and 1697 bp, and with an overall coverage of 68% (CO1: 101 seq.; NADH: 70 seq.; 16S: 39 seq.). Details are available as Supplemental S1, a list of included taxonomic units for the molecular analysis with GenBank accession-numbers (online at http://dx.doi.org/10.1636/R15-81.s1), and Supplemental S2, a PHYLIP file showing the alignment of the mitochondrial CO1, NADH1 and 16S sequences (online at http://dx.doi.org/10.1636/R15-81.s2). Both files are also available online at http://agelenidsoftheworld.myspecies.info/content/downloads.

Maximum likelihood analysis and bootstrap runs were performed using GARLI 2.01 (Zwickl 2006) at the CIPRES Science Gateway (M.A. Miller et al. 2010). For the two mitochondrial partitions, the codon model was applied, for the 16S partition a GTR+G+I model was used as suggested by the model search function in MEGA 6.0 (Tamura et al. 2013). Bootstrap values were subsequently drawn on the best ML tree using the program SumTrees within DendroPy (Sukumaran & Holder 2010, 2015). Parsimony analysis was performed in TNT Version 1.1 (Goloboff et al. 2008) applying a heuristic tree search with TBR, implied weighting (K=10), and 1000 random additions of taxa while holding 100 trees per iteration. Branch support was estimated by applying a jackknife resampling method (1000 replicates) with default removal probability of characters (0.36). For both phylogenetic analyses, *Amaurobius ferox* (Walckenaer, 1830) (Amaurobiidae) was used as the outgroup, and resulting trees were rooted at the *Amaurobius* branch/clade.

Morphological methods and abbreviations.—Preserved specimens were examined under a Leica MZ12 and a Leica M165 C microscope. Images were taken using a Leica MC170 HD camera attached to the Leica M165 C, and processed with the stacking program CombineZP (Alan Hadley) and Adobe Photoshop. To remove soft tissue, dissected female genitalia were first transferred to distilled water for several hours. Subsequently, they were put in an enzymatic lens cleaner solution overnight, washed, and transferred back to ethanol. The morphological terminology follows Bolzern et al. (2013a). The following abbreviations are used (see also Figs. 8, 9, 11, 14–16, 18–20, 22, 27, 28): AER, anterior eye row; ALE, anterior lateral eyes; ALS, anterior lateral spinnerets; AME, anterior median eyes; bulbL, distance of the cymbium base to the most distal tip of the male bulb (including conductor); C, conductor; CB, cymbium breadth; CD, copulatory duct; CL, carapace length; CLY1, clypeus height under AME; CLY2, clypeus height under ALE; CO, copulatory opening at female epigyne; CW, carapace width; DB, dorsal branch of RTA; DP, distal portion of conductor; DS, distal sclerite at MA; E, embolus; FD, fertilization duct; MA, median apophysis of male bulb; OL, opisthosoma length; OW, opisthosoma width; PER, posterior eye row; PLE, posterior lateral eyes; PLS, posterior lateral spinnerets; PM, posterior membrane (internal posterior limit of female genital area); PME, posterior median eyes; PMS, posterior median spinnerets; PS, epigynal posterior sclerite; PT, epigynal 'pseudo teeth'; R, retroventral ridge of palpal tibia; RC, receptaculum; RTA, retrolateral tibial apophysis (used here as the sum of all structures on the retrolateral aspect of the tibia of the male pedipalp); STL, sternum length; STW, sternum width; T, tegulum; TR, transversal ridge at conductor; VB, ventral branch of RTA.

Taxonomical nomenclature follows the World Spider Catalog (2015).

RESULTS

Molecular data.—Maximum likelihood and parsimony (MP) analyses resulted in essentially identical best trees (Fig. 1, MP tree not shown). The higher level classification proposed by Bolzern et al. (2013a) is supported by the molecular data presented here and summarized as follows (see also Fig. 1): (1), Agelenidae is split into the two monophyletic subfamilies Ageleninae and Coelotinae; (2), the genera *Tegenaria* and *Eratigena* are separate monophyletic clades. However, the relationships between genera are unclear due to low supporting values. Based on mitochondrial DNA, the Mexican-clade represents a monophyletic sister-group to all other included *Eratigena* species (Fig. 1). Within this Mexican-clade, *E. yarini* sp. nov. and *E. edmundoi* sp. nov. represent a closely related, well supported monophyletic subgroup, the *flexuosa*-group. Within the remaining species of the Mexican-clade, the species *E. mexicana* (Roth, 1968) and *E. tlaxcala* (Roth, 1968) are very closely related. A *mexicana*-group, as suggested by morphological data, is not supported by mtDNA data.

Morphological data.—The finding that the Mexican species previously described in *Tegenaria* s. l. are closely related to Palearctic *Eratigena* species is supported by the following morphological characters, which match the genus definition of *Eratigena* Bolzern et al. (2013a): (1), dentition of the retromargin of the chelicerae (six or more teeth, decreasing in size proximally); (2), the PMS bearing one conspicuously prominent spigot; (3), colulus developed as a trapezoidal plate with distal margin w-shaped; (4), absence of a retroventral ridge on male palpal tibia; (5), presence of a transverse hyaline (lamelliform) ridge on the conductor; and (6), presence of appendages at the genital ducts in females (*mexicana*-group). Therefore, all Mexican *Tegenaria* species are here transferred from *Tegenaria* to *Eratigena*.

Based on genital morphology (for details see Taxonomy section), the Mexican *Eratigena* species can be divided into a southern (the *flexuosa*-group, also supported by mtDNA) and a northern species group (the *mexicana*-group).

Tegenaria chiricahuae Roth, 1968, the only species exclusively known from Northern America (USA), differs morphologically from the Mexican species in all characters mentioned above and matches the definition of *Tegenaria*. Therefore, it remains the single endemic representative of the genus *Tegenaria* in the Western Hemisphere.

SYSTEMATICS

Family Agelenidae C.L. Koch, 1837
Genus *Tegenaria* Latreille, 1844

Tegenaria Latreille, 1844: 134. Full synonymy: see World Spider Catalog (2015).

Type species.—*Araneus domesticus* Clerck, 1757, by subsequent designation of Kluge (2007).

Diagnosis.—A detailed diagnosis for the genus *Tegenaria* was provided by Bolzern et al. (2013a: 774–775).

Distribution.—The currently 104 described species (World Spider Catalog 2015; this publication) are primarily distributed in the Mediterranean Region, spreading towards Asia. *Tegeneria domestica* (Clerck, 1757), *T. pagana* C. L. Koch, 1840 and *T. parietina* (Fourcroy, 1785) expanded their distribution areas extensively, most likely due to introductions by humans. In the Western Hemisphere, *T. chiricahuae* represents the only known endemic species.

Tegenaria chiricahuae Roth, 1968
Figs. 8–16

Tegenaria chiricahuae Roth, 1968: 7, figs. 9–11.

Type material.—*Holotype male.* UNITED STATES: *Arizona*: Cochise Co., Chiricahua Mountains, Cave Creek Canyon, 4.83 km W. of Portal, 28 November 1963, V. Roth (AMNH).

Paratypes. UNITED STATES: *Arizona*: 1 ♀ allotype, same data as holotype except 30 June 1963 (AMNH); 1 ♀, same data except 30 November 1962 (MNHN).

Other material examined.—UNITED STATES: *Arizona*: 1 ♀, Cochise Co., Chiricahua Mountains, Cave Creek Canyon, small cave 3.22 km W. of Portal, 2 June 1972, G. Dingerkus (AMNH: AB1155); 1 ♂, 1 ♀, Huachuca Mountains, Carr Canyon, 1829 m, in cave with some litter, 23 March 1964, L. La Pré, M. Eells (AMNH: AB1180). *New Mexico*: 1 ♂, "new cave", 18 December 1976, P. Strinati (MSCNV); 1 ♂, 4 ♀, Eddy Co., Carlsbad Caverns National Park, Midnight Canyon, Ringtail Cave (Flea Cave), 26 May 1973, Wm. Elliott, W.C. Welbourn (AMNH: AB1150); 1 ♂, 1 ♀, same data except Arch Cave, 27 November 1975, W.C. Welbourn (AMNH: AB1121); 1 ♂, same data except Dome Cave, 15 February 1975 (AMNH: AB1149); 2 ♀, same data except Helen's Cave, 31 August 1974 (AMNH: AB1152); 1 ♂, same data except cave, goat trap, 19 February 1976 (AMNH). *Texas*: 2 ♀, Culberson Co., Guadalupe Mountains National Park, cave, upper sloth, 17 April 1976, W.C. Welbourn (AMNH).

Diagnosis.—Male *Tegenaria chiricahuae* can be separated from all other *Tegenaria* species by the simple RTA (Figs. 13, 16), the large median apophysis with a pocket-like distal sclerite and the distally keel-shaped conductor tip (Figs. 14, 15). Females can be distinguished from other species by the distinct conformation of the epigyne and vulva (Figs. 8–12).

Description.—Essential information was provided by Roth (1968).

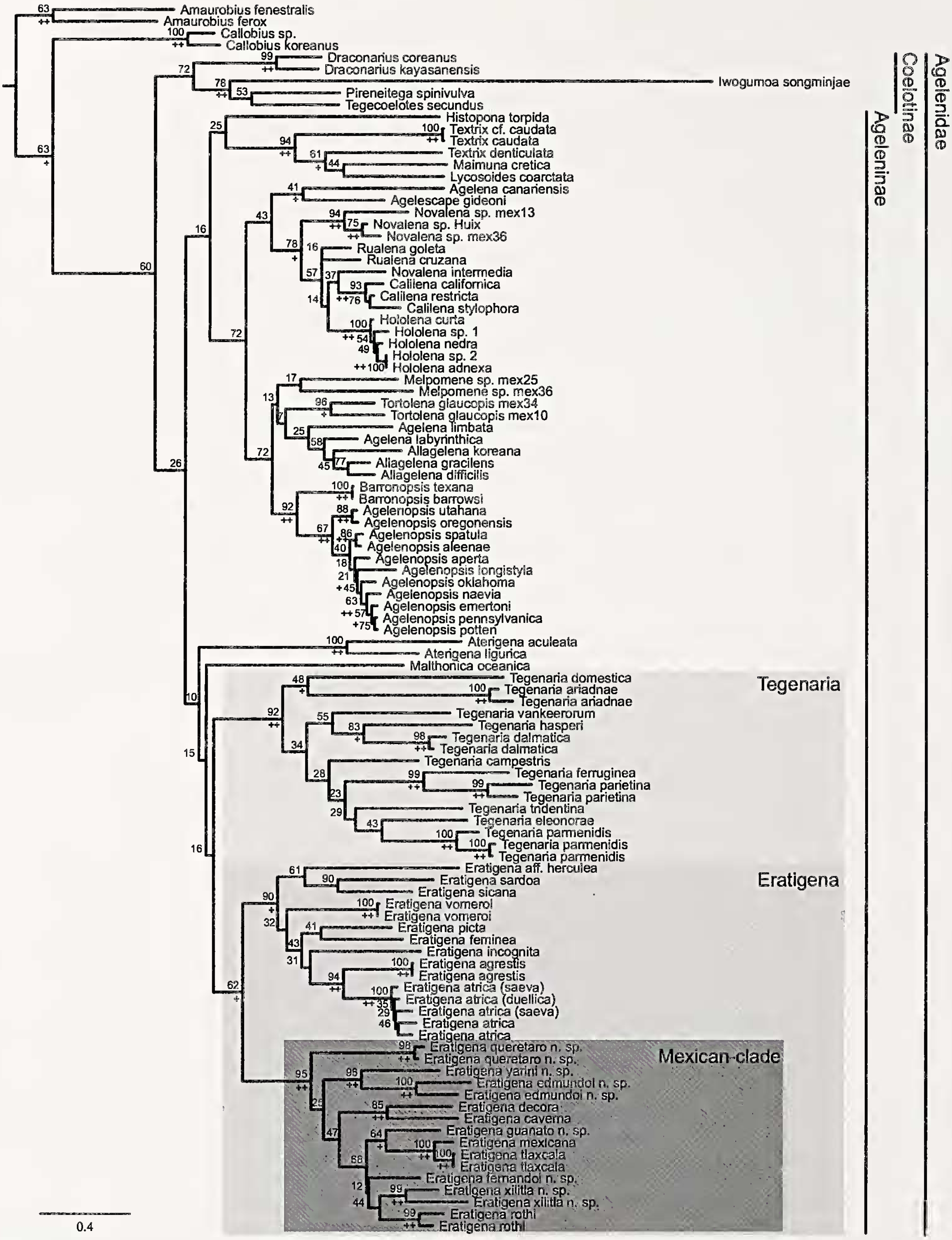

Figure 1.—Best maximum likelihood tree of mitochondrial genes (CO1, NADH, 16S). Bootstrap values are given left and above nodes. Clades with jackknife support higher than 50 % (+) or 85 % (++) from maximum parsimony analysis of the same alignment are indicated left and below nodes.

Distribution.—Reported from several caves in Arizona and New Mexico (United States).

Tegenaria domestica (Clerck, 1757)

Araneus domesticus Clerck, 1757: 76–79, pl. 2, tab. 9, figs. 1–4 (in part). Full synonymy: see Roth (1968) and Bolzern et al. (2013a).

Diagnosis.—Male *Tegenaria domestica* can be separated from all other *Tegenaria* species by the distinct RTA (Roth 1968: figs. 14, 15), the truncated terminal end of the embolus, and the terminally bifid conductor (Bolzern et al. 2013a: fig. 16 W, X). Females differ in having a strongly sclerotized posterior sclerite with the anterior margin concave in combination with a simple, subglobular vulva (Bolzern et al. 2013a: figs. 2 f, 18 b, c).

Distribution.—Introduced from Europe. Cosmopolitan (synanthropic species).

Tegenaria pagana C.L. Koch, 1840

Tegenaria pagana C.L. Koch, 1840: 31, pl. 262, figs. 612, 613. Full synonymy: see Roth (1968) and Bolzern et al. (2013a).

Diagnosis.—Male *Tegenaria pagana* can be separated from all other *Tegenaria* species by the transversally arranged conductor, the elongated finger-shaped distal sclerite of the MA, and the distinct RTA (Roth 1968: figs. 30, 31; Bolzern et al. 2013a: fig. 28 K–L). Females show a high variability in epigynal morphology but differ from others in having a protruding suboval median plate with distinct anterolateral pockets, and a distinct triple twisted vulva (Bolzern et al. 2013a: figs. 28 P–W).

Distribution.—Europe to Central Asia, introduced to North- and South America and New Zealand.

Tegenaria parietina (Fourcroy, 1785)

Aranea parietina Fourcroy, 1785: 533. Full synonymy: see Bolzern et al. (2013a).

Diagnosis.—*Tegenaria parietina* specimens are most similar to specimens of *Tegenaria ferruginea* (Panzer, 1804) but differ from all other species in having a unique RTA and a very strongly U-shaped anterior margin of the posterior sclerite in females (Bolzern et al. 2013a: fig. 21 N–R). Males can be separated from *T. ferruginea* by the much shorter conductor, females by the much less convoluted vulva.

Distribution.—Introduced from Europe. In the Western Hemisphere, reported from the West Indies to Argentina.

Genus ***Eratigena*** Bolzern, Burckhardt & Hänggi, 2013

Eratigena Bolzern, Burckhardt & Hänggi, 2013: 738

Type Species.—*Tegenaria atrica* C. L. Koch, 1843, by original designation.

Diagnosis.—A detailed diagnosis for the genus *Eratigena* was provided by Bolzern et al. (2013a: 738–741).

Distribution.—The currently 34 described species (World Spider Catalog 2015; this publication) are primarily distributed in the West Mediterranean Region, but with representatives reaching as far east as Laos and 15 endemic species in Mexico. *Eratigena atrica* (C. L. Koch, 1843) and *E. agrestis* (Walckenaer, 1802) were introduced into Northern America.

KEY TO THE NEARCTIC SPECIES OF *ERATIGENA*

1 male palpal tibia with short dorsal spike, median apophysis pocket-like; female vulva with strongly convoluted and enclosed duct 2
- male palpal tibia without short dorsal spike, median apophysis protruding; female vulva with duct not enclosed 3

2 male with massive and broad conductor with strongly sclerotized, pointed terminal appendages; female epigyne with protruding posterior sclerite and deep anterior cavity .... *agrestis*
- male with strong conductor, terminally with elongated tip; female epigyne with large median area without protuberance or cavity .... *atrica*

3 male conductor distally distinctly elongated (Figs. 27, 34, 52, 64); female with flattened or coiled copulatory duct without appendages (Figs. 19, 41, 45, 61) .... *flexuosa*-group, 4
- distal portion of male conductor not distinctly elongated (Figs. 79, 82, 94, 112, 136, 142, 160, 166, 175, 187, 196, 208); female with short and straight copulatory duct with appendages (Figs. 73, 87, 101, 124, 133, 147, 149, 158, 185, 192, 206, 218) .... *mexicana*-group, 7

4 carapace length smaller than 3 mm; subtegular sperm duct of male bulb c-shaped (Fig. 64); copulatory duct only flattened, not coiled (Fig. 61) .... *yarini*
- carapace longer than 3 mm; subtegular sperm duct of male bulb moderately s-shaped (Figs. 27, 34, 52); copulatory duct coiled (Figs. 19, 41, 43) 5

5 tegular sperm duct strongly undulated (arrow in Fig. 34); epigynal atrium bordered by pronounced broad ridge (Fig. 38) .... *flexuosa*
- tegular sperm duct almost straight (Figs. 27, 52); epigynal atrium not bordered by protruding ridge (Figs. 18, 42) 6

6 median apophysis long, with long triangular distal sclerite (Figs. 26, 28); copulatory duct with only one coil (Fig. 19) .... *edmundoi*
- median apophysis very short, with reduced distal sclerite (arrows in Figs. 51–53); copulatory duct with two coils (Figs. 43–56) .... *florea*

7 carapace longer than 5 mm; legs exceptionally long (patella-tibia length leg I > 9 mm); indistinct abdominal pattern, grayish .... *selva*
- carapace shorter, if equally long, legs shorter and with distinct abdominal pattern 8

8 eyes at least moderately reduced (Figs. 66, 84) 9
- eyes well developed 10
9 eyes strongly reduced (Fig. 84) .... *caverna*
- eyes moderately reduced (Fig. 66) .... *blanda*
10 AME larger than PME (Figs. 163, 164, 212) 11
- AME equally sized or smaller than PME 12
11 CL shorter than 4 mm; male with distal sclerite of MA spoon-shaped, rounded (Figs. 208, 209); female with epigynal posterior sclerite dumbbell-shaped (Fig. 215) .... *xilitla*
- CL longer than 4.5 mm; male with distal sclerite of MA long, subtriangular and pointed (Figs. 165, 167); female with epigynal posterior sclerite as in Fig. 170 .... *rothi*
12 male pedipalp with elongated femur and tibia (Fig. 140); female with posterior membrane (internal posterior limit of genital area) distinctly protruding anteriad (Figs. 148, 149) .... *mexicana*
- male palpal femur and tibia not elongated; female with posterior membrane only moderately protruding, sometimes with median notch 13
13 RTA with dorsal branch distally hook-shaped (Fig. 136); female with dumbbell-shaped posterior sclerite (posterior and anterior margins concave, Fig. 131) .... *guanato*
- RTA with dorsal branch distally pointed or truncated; posterior epigynal sclerite with anterior margin concave only .. 14
14 MA with distal sclerite distally pointed (Figs. 95, 161); female with prominent or elongated appendages at genital duct (Figs. 99–101, 158) 15
- MA with distal sclerite spoon-shaped, distally rounded; female with subcircular, less prominent appendages at genital duct 16
15 MA with distal sclerite long triangular, sharply pointed (Figs. 159, 161); female vulva with arc-shaped anterior part (Fig. 158) .... *queretaro*
- MA with distal sclerite subtriangular (Figs. 93, 95); female with distinctly elongated appendages at genital duct (Figs. 99–101) .... *decora*
16 sternum with distinct pale patch only at the anterior half (Fig. 103); PLS with distal segment as long as basal segment (Fig. 104); sperm duct at tegulum without distinct curve (Fig. 111); female with semicircular posterior sclerite (Fig. 105) .... *fernandoi*
- sternum with different pattern; PLS with distal segment longer than basal segment (Fig. 118); sperm duct at tegulum with distinct curve (Fig. 195); female posterior sclerite with anterior margin concave, posterior margin straight 17
17 sternum with pale median line; MA with distal sclerite narrow, connection between tegulum and conductor narrow (Figs. 195–197); female as in Figs. 202–206 .... *tlaxcala*
- sternum without pattern; MA with distal sclerite broad, connection between tegulum and conductor broad (Figs. 115, 116); female as in Figs. 122–125 .... *gertschi*

Eratigena agrestis (Walckenaer, 1802)

Aranea agrestis Walckenaer, 1802: 216. Full synonymy: see Bolzern et al. (2013a).

Diagnosis.—Male *Eratigena agrestis* are similar to specimens of *E. atrica* in having a pocket-like (Roth 1968: "shell-like") median apophysis but differ from all other *Eratigena* species in having a massive and broad conductor with strongly sclerotized, pointed terminal appendages (Bolzern et al. 2013a: figs. 8 C–D, 9 A–B). Females differ in having a distinct epigyne with protruding posterior sclerite and deep anterior cavity (Bolzern et al. 2013a: fig. 9 D).

Distribution.—Introduced from Europe. In the Western Hemisphere, reported from several north-western states and New York (USA), and south-western parts of Canada.

Eratigena atrica (C. L. Koch, 1843)

Tegenaria atrica C. L. Koch, 1843: 105, fig. 825. Full synonymy: see Bolzern et al. (2013a).

Diagnosis.—*Eratigena atrica* specimens are similar to specimens of *E. agrestis* in having a pocket-like median apophysis, but differ from all other species in having the strongly sclerotized, finger-shaped and pointed dorsal branch of the RTA originating on a protuberance, and a strong conductor (Bolzern et al. 2013a: fig. 9 J–O). Females differ in having the large epigynal area as long as wide with distinct 'pseudo teeth', and having a uniquely shaped vulva (Bolzern et al. 2013a: fig. 10 A–F).

Distribution.—Introduced from Europe. In the Western Hemisphere, reported from the north-western United States and southern Canada (from east to west).

THE *FLEXUOSA*-GROUP

The *flexuosa*-group comprises four species: *E. edmundoi* sp. nov., *E. flexuosa* (F. O. Pickard-Cambridge, 1902) comb. nov., *E. florea* (Brignoli, 1974) comb. nov., and *E. yarini* sp. nov. The elongated distal part of the conductor (Figs. 27, 34, 52, 64) and the strongly elongated and coiled copulatory duct (anterior part, Figs. 19, 41, 45, 61) separate them from species of the *mexicana*-group.

Eratigena edmundoi sp. nov.

http://zoobank.org/?lsid=urn:lsid:zoobank.org:act:67CC827B-EF04-4C8F-AB60-6D7C7340C29A

Figs. 2, 3, 17–29

Type material.—*Holotype female*. MEXICO: *Veracruz*: Pico de Orizaba Volcano, Atotonilco de Calcahualco, plot 1, 2300

Figures 2–7.—Photographs of habitats and webs. 2 & 3, *Eratigena edmundoi* sp. nov. from Ajalpan, street between Pala and Nicolás Bravo, 2619 m (Mexico); 4 & 5, *Eratigena decora* Gertsch, 1971 from Xilitla, Ahuacatlán, ESE. of Potrerillos, Cueva de Potrerillos, 1181 m (Mexico); 6, *Eratigena queretaro* sp. nov. from Pinal de Amoles, at road 120 between Jalpan de Serra and Pinal de Amoles, close to La Curva del Chuveje, 20 km W. of Jalpan, 1288 m (Mexico); 7, *Eratigena caverna* Gertsch, 1971 from Peñamiller, Cueva Puerto del Léon, 6.5 km SE. of Río Blanco, 2484 m (Mexico).

m, 14 February 2012, Lab. Aracnologia, F. Alvarez Padilla (FC-UNAM: AB1340).

Paratypes. MEXICO: *Veracruz*: 1 ♂, same data as holotype (FC-UNAM: AB1340); 1 ♀, same data (FC-UNAM: AB1343: accession-nr. LN887151, LN887174); 1 ♂, same data (FC-UNAM: AB1338).

Other material examined.—MEXICO: *Puebla*: 1 ♀, 3 juv., Ajalpan, street between Pala and Nicolás Bravo, 2619 m, oak-pine forest, at terrain break at steep slope near path in the forest, 7 October 2014, A. Bolzern, E. González Santillán (NMB-ARAN-27500: AB1276); 1 ♂, 4 ♀, 2 juv., same data except 2545 m, pine forest, at terrain break (NMB-ARAN-27501 to 27502: AB1275, AB1255: accession-nr. LN887150, LN887173); 2 ♀, Zoquitlán, 2nd river cave, 31 December 1977, P. Strickland (AMNH: AB1148). *Veracruz*: 1 ♀, Volcán San Martin, near San Andres, 1524 m, 14 July 1953, C.J. Goodnight (AMNH: AB1168).

Etymology.—The specific name is a patronym in honor of Edmundo González Santillán, a Mexican arachnologist, expedition guide and friend.

Diagnosis.—Male *E. edmundoi* sp. nov. specimens differ from others of the group by the long triangular distal sclerite at the median apophysis (Figs. 27, 28; rather than spoon shaped in *E. yarini* sp. nov. and *E. flexuosa*, moderately reduced in *E. florea*). They differ from *E. yarini* sp. nov. by the larger size (CL longer than 3.5 mm; in *E. yarini* sp. nov. shorter than 3 mm), and by the s-shaped subtegular sperm duct (Fig. 27; rather than c-shaped), and from *E. flexuosa* by the only moderately undulated tegular sperm duct (Fig. 27; rather than strongly undulated). Female specimens differ from all others of the group by the single coiled copulatory duct (Fig. 19; rather than only flattened in *E. yarini* sp. nov., double coiled in *E. flexuosa* and *E. florea*). In addition, specimens of *E. edmundoi* sp. nov. differ in having the distal segment of the PLS only proximally darkened (Fig. 17).

Description.—*Measurements:* Male (paratype): CL 4.0, CW 3.17, STL 1.97, STW 1.93, OL 4.27, OW 2.6. Leg I (6.8, 1.73, 6.4, 6.8, 3.3), II (5.87, 1.67, 3.67, 5.8, 2.93), III (5.27, 1.33, 4.07, 5.4, 2.4), IV (6.47, 1.6, 5.53, 7.4, 3.33), Pedipalp (1.83, 0.67, 1.0, 1.67), bulbL 1.0. Female (holotype): CL 4.01, CW 3.0, STL 1.8, STW 1.8, OL 5.33, OW 3.87. Leg I (5.2, 1.53, 4.66, 4.93, 2.6), II (4.27, 1.4, 3.53, 4.27, 2.0), III (3.93, 1.2, 3.2, 3.93, 1.87), IV (5.2, 1.4, 4.2, 5.4, 2.27). Pedipalp (1.77, 0.73, 1.23, 1.87). EPL 0.33, EPW 0.63. Eyes: eye rows moderately procurved (Fig. 23). PME 0.21, PLE 0.26, AME 0.24, ALE 0.23. Eye distances: PME–PME 1 x PME, PME–AME 0.5–0.75 x PME, PME–PLE 0.5 x PME, PME–ALE 0.75–1 x PME, AME–AME 0.5 x AME, AME–ALE 0.25 x AME. CLY1 1.5 x AME, CLY2 0.5 x ALE. *Male pedipalp:* RTA with two branches, lateral branch simple, lobe-like, moderately protruding, dorsal branch strongly sclerotized, narrow finger shaped, sharply pointed. Short dorsal spike on palpal tibia absent. Embolus length about 3.5 x CB, originating at 7–8 o'clock position, distal tip at 3–4 o'clock position. Conductor lamelliform, distal portion (DP) distinctly elongated, lateral margin folded (Figs. 27, 28). Terminal end of conductor strongly elongated, pointed. Transversal ridge (TR) of conductor expressed as hyaline ridge (Fig. 27). Conductor membranously connected to tegulum. MA originating at 4–5 o'clock position, protruding, longer than wide, distal sclerite (DS) translucent, long triangularly shaped (Figs. 27, 28). MA membranously connected to tegulum. *Epigyne and vulva*: Epigyne medially with a pale, hyaline area (Fig. 18). Posterior sclerite protruding anteroventral as moderately sclerotized bar with anterior margin concave (semicircular, Fig. 18), posterior membrane (PM, internal posterior limitation of genital area) notched (Fig. 19). CO laterally of posterior sclerite. Epigynal 'pseudo teeth' present, small (Fig. 20). Vulva consists of combined narrowly convoluted duct, CD less sclerotized, with one coil, without appendages, RC stronger sclerotized (Fig. 19). FD only represented by small, leaf-shaped appendages (Fig. 22). *Other important characters*: Cheliceral promargin with 4–5, retromargin with 7–8 teeth, more proximally, the teeth become smaller. Colulus developed as trapezoidal plate with distal margin w-shaped. PMS bearing one conspicuously prominent spigot. PLS with distal segment nearly as long as basal segment (Fig. 25). Trichobothria on cymbium and palpal tarsus absent. Tarsal trichobothria at leg I 6–7. Small teeth on paired claws of leg I 10–11. Leg spination: male pedipalp (2-0-0 or 2-1-0, 2-0-0, 1-1+1p-0), female pedipalp (3-0-0, 2-0-0, 2-2-0), leg femora (1-3-2-0, 1-2-2-0 or 1-3-2-0, 1-2-2-0, 1-0-1-0 or 1-0-2-0 or 1-1-2-0), patellae (all 2-0-0), tibiae (0-0-0-4p or 0-1-0-1+3p, 0-0-0-1p+2+1p or 0-1-0-1p+2+1p, 1-2-2-2+2p or 2-2-2-2+2p, 2-2-2-3+1p), metatarsi (0-0-0-4p+1, 0-1-0-4p+1, 0-3-2-4p+1 or 0-3-3-4p+1, 0-3-3-3p+1+1p+1), tarsi (0, 0, 0-2-3-0, 0-2-3-0). *Coloration*: Carapace with two longitudinal symmetrical dark bands, irregularly expressed, margins narrowly darkened, head region dorsolaterally with two distinct, longitudinally curved dark bands (Fig. 17). Chelicerae frontally with distinct dark patches (Fig. 23). Sternum darkened anteriorly, sometimes also posteriorly (less distinct) with pale median band (Fig. 24). Opisthosoma dark, black, with reddish pale median band, anteriorly bordered by black bands or almost completely black, posteriorly with yellowish, reddish chevrons, indistinct (Fig. 17). Legs irregularly annulated. Colulus laterally darkened. ALS moderately, basal segment of PLS distinctly darkened, distal segment of PLS only proximal half darkened.

Distribution.—Reported from the two states Puebla and Veracruz (Mexico).

Eratigena flexuosa (F.O. Pickard-Cambridge, 1902), comb. nov.
Figs. 30–41

Tegenaria flexuosa F.O. Pickard-Cambridge, 1902: 334, pl. 31, fig. 34; Roth, 1968: 14, figs. 19, 20.

Type material.—*Holotype male*. MEXICO: *Guerrero*: Omiltemi ("Omilteme" on label), 28 April 1900, F.D. Godman (NHML).

Other material examined.—MEXICO: *Guerrero*: 1 ♀, Chilpancingo, Cueva del Borrego, 3.5 km E of Omiltemi, 2623 m, pine-oak forest, 23 July 2009, A. Valdez, O. Francke, H. Montaño, C. Santibáñez, T. Palafox, C. Trajano (CNAN: AB1199); 3 ♀, same data except Cueva del Borrego, 2 km E of Omiltemi, 1835 m, vegetation outside the cave, 20 June 2007, O. Francke, H. Montaño, L. Escalante, A. Ballesteros (CNAN: AB1202).

Diagnosis.—Male *E. flexuosa* specimens differ from others of the group by the strongly undulated tegular sperm duct (Fig. 34; rather than moderately undulated). They differ from *E. edmundoi* sp. nov. and *E. florea* by the spoon-like distal sclerite of the MA (Figs. 33, 34; rather than long triangular or moderately reduced). They differ from *E. yarini* sp. nov. by the larger size (CL longer than 3.5 mm; in *E. yarini* sp. nov. shorter than 3 mm), and by the s-shaped subtegular sperm duct (Fig. 34; rather than c-shaped). Female specimens differ from *E. edmundoi* sp. nov. and *E. yarini* sp. nov. by the double coiled copulatory duct (Fig. 41; rather than single coiled or only flattened), and from *E. florea* in having the epigynal median area bordered by a pronounced broad ridge (Fig. 38).

Description.—Essential information for the male was provided by F.O. Pickard-Cambridge (1902). *Measurements:* Female (AB1199): CL 3.75, CW 2.67, STL 2.0, STW 1.63, OL 3.67, OW 2.33. Leg I (6.13, 1.60, 5.67, 6.00, 2.8), II (5.00, 1.47, 4.47, 5.13, 2.33), III (4.40, 1.33, 3.60, 4.87, 2.20), IV (5.27, 1.47, 5.0, 6.87, 2.40). Pedipalp (1.97, 0.67, 1.17, 2.0). EPL 0.56, EPW 0.88. Eyes: anterior eye row straight, posterior eye row procurved (Fig. 37). PME 0.17, PLE 0.19 , AME 0.15, ALE 0.22. Eye distances: PME–PME 0.75 x PME, PME–AME 1 x PME, PME–PLE 1 x PME, PME–ALE 1.5 x PME, AME–AME 0.5 x AME, AME–ALE 0.5 x AME. CLY1 1.5 x AME, CLY2 1.25 x ALE. *Epigyne and vulva*: Epigyne with hyaline area subrectangular, bordered by pronounced broad ridge (Fig. 38). Posterior membrane without notch (Fig. 41). CO anterolateral to posterior sclerite. Epigynal 'pseudo teeth' indistinct (Fig. 39). Vulva consists of combined narrowly convoluted duct, CD less sclerotized, almost double coiled, without appendages, RC more strongly sclerotized (Fig 41). FD only represented by small, leaf-shaped appendages. *Other important characters*: Cheliceral promargin with 4, retromargin with 6 teeth, more proximally, the teeth become smaller (Fig. 36). Colulus developed as trapezoidal plate with distal margin moderately w-shaped. PMS bearing one conspicuously prominent spigot. PLS with distal segment moderately longer than basal segment (Fig. 32). Trichobothria on cymbium and palpal tarsus absent. Tarsal trichobothria of leg I 7. Small teeth on paired claws of leg I 10–11. Leg spination: female pedipalp (1-0-0 or 2-0-0, 2-0-0, 2-1-2), leg femora (1-3-1-0 or 1-3-2-0, 1-2-2-0 or 1-3-2-0, 1-0-2-0 or 1-1-2-0, 1-0-1-0), patellae (all 2-0-0), tibiae (0-0-0-1 or 0-1-0-1, 0-1-0-1p or 1-1-0-1p, 2-1-1-2p, 2-1-1-1), metatarsi (0-0-0-1p+1+1p+1, 0-0-0-1p+2+1p+1, 0-1-1-4p+1 or 0-1-2-4p+1, 0-2-1-4p+1 or 0-2-2-4p+1), tarsi (0, 0, 0-0-1-0, 0-0-2-0). *Coloration*: Carapace with two longitudinal symmetrical dark bands, irregularly and indistinctly expressed, margins narrowly darkened, head region dorsolateral with two indistinct, longitudinally curved dark bands (Fig. 30). Chelicerae frontally without dark patches (Fig. 37). Sternum darkened, with indistinct pale median band (Fig. 31). Opisthosoma dark brownish to black, with yellowish pale median band, anteriorly with two longitudinally dark bands, posteriorly with yellowish chevrons (Fig. 30). Legs irregularly annulated. Colulus pale or laterally moderately darkened. ALS and both segments of PLS moderately darkened.

Distribution.—Reported only from the state of Guerrero (Mexico).

Comments.—Based on the drawing provided by F.O. Pickard-Cambridge (1902), Roth stated that the median apophysis is lacking (Roth 1968: 14), but this was a misinterpretation (see Figs. 33–35). Males and females have never been collected together (the only known male is the holotype). However, based on their morphological similarity and their collection close to the type locality, these females are tentatively placed with this species.

Eratigena florea (Brignoli, 1974), comb. nov.
Figs.42–53

Tegenaria florea Brignoli, 1974: 228, fig. 10A, C.
Tegenaria prope *florea*: Brignoli, 1974: 231, fig. 10B.

Type material.—*Holotype female*. MEXICO: *Chiapas*: Comitán, Cueva de las Florecillas, 2265 m, 18 March 1971, A. Zollini (MCSNV).

Other material examined.—MEXICO: *Chiapas*: 1 ♀, Amatenango, Cueva I de Tulanca, 2200 m, 4 March 1971, V. Sbordoni (MCSNV); 1 ♀, Comitán, Cueva de la Cruz Belen, 2210 m, 19 March 1971, R. Argano (MCSNV, sub prope *florea*); 1 ♀, 5 miles West of San Cristobal, 24 August 1966, W. & J. Ivie (AMNH: AB1112); 1 ♀, same data except 2438 m, pine-oak forest, 16 August to 3 September 1969, S. & J. Peck (AMNH: AB1166); 1 ♂, Laguna Bélgica Educational Park, 16 km NW. of Ocozocoautla de Espinosa, 14 June 1990, H. Howden (AMNH: AB1141). *Oaxaca*: 1 ♀, Santa María Tlahuitoltepec, Distrito Mixes, 2032 m, pine forest, disturbed, 14 September 2009, A. Valdez, C. Santibáñez, R. Paredes (CNAN: AB1193); 1 ♀, Yautepec, Santo Tomás Teipan, 2346 m, cloud forest, 20 March 2002, S. Reynaud (CNAN: AB1200).

Diagnosis.—Male *E. florea* specimens differ from others of the group by the moderately reduced distal sclerite of the median apophysis (Figs. 51, 52; rather than long and triangular in *E. edmundoi* sp. nov., spoon shaped in *E. yarini* sp. nov. and *E. flexuosa*). Female specimens differ from *E. edmundoi* sp. nov. and *E. yarini* sp. nov. by the double coiled copulatory duct (Fig. 43; rather than single coiled or only flattened), and from *E. flexuosa* in having the epigynal median area not bordered by a pronounced broad ridge (Fig. 42).

Description.—Essential information for the female was provided by Brignoli (1974). *Measurements:* Male (AB1141): CL 2.9, CW 2.17, STL 1.42, STW 1.34, OL 3.17, OW 2.1. Leg I (5.25, 1.15, 5.15, 5.8, 3.05), II (4.6, 1.0, 3.98, 4.5, 2.1), III (4.1, 1.0, 3.65, 4.5, 2.25), IV (5.35, 1.0, 4.75, 6.4, 2.8), Pedipalp (1.3, 0.44, 0.56, 1.18), bulbL 0.84. Eyes: eye rows moderately procurved (Fig. 48). PME 0.17, PLE 0.18 , AME 0.16, ALE 0.22. Eye distances: PME–PME 0.5 x PME, PME–AME 0.5 x PME, PME–PLE 0.4 x PME, PME–ALE 0.7 x PME, AME–AME 0.5 x AME, AME–ALE 0.25 x AME. CLY1 1.5–2 x AME, CLY2 0.75–1 x ALE. *Male pedipalp:* RTA with two branches, lateral branch simple, lobe-like, moderately protruding, dorsal branch strongly sclerotized, narrow finger shaped, sharply pointed. Short dorsal spike on palpal tibia absent. Embolus length about 3.5 x CB, originating at 7–8 o'clock position, distal tip at 4 o'clock position. Conductor lamelliform, distal portion distinctly elongated, lateral margin folded (Figs. 51–53). Terminal end of conductor strongly elongated, pointed. Transversal ridge of conductor expressed as hyaline ridge. Conductor membranously connected to tegulum. MA originating at 4–5 o'clock position, as long as wide, distal sclerite translucent, plate like, moderately reduced (Figs. 51–53). *Other important characters*: Cheliceral promargin with 4–5, retromargin with 7–8 teeth, more proximally, the teeth become smaller. Colulus developed as rectangular to trapezoidal plate with distal margin w-shaped. PLS with distal segment slightly shorter than basal segment (Fig. 50). Trichobothria on cymbium and palpal tarsus absent. Tarsal trichobothria at leg I 6–7. Small teeth on paired claws of leg I 8. Leg spination: male pedipalp (2-0-0, 2-0-0, 1-1-0), leg femora (1-2-0-0, 1-0-0-0 or 1-1-0-0, 1-0-0-0, 1-0-0-0), patellae (all 2-0-0), tibiae (0-0-0-1, 0-0-0-1 or 1-0-0-1, 2-1-0-1, 2-1-1-1), metatarsi (0-0-0-1p+1+1p+1, 0-0-0-1p+1+1p+1 or 0-0-0-1p+2+1p+1, 0-2-1-1p+1+2p+1, 0-2-1-1p+2+1p+1), tarsi (0, 0, 0, 0-0-1-0). *Coloration*: Carapace with two longitudinal symmetrical dark bands, irregularly expressed, margins narrowly darkened (Fig. 47). Chelicerae frontally with indistinct dark patches (Fig. 48). Sternum indistinctly darkened, anteriorly with pale median band (Fig. 49). Opisthosoma dark, grayish brown, without reddish pigments, pale median band, posteriorly with pale, yellowish chevrons, indistinct (Fig. 47). Legs irregularly annulated, indistinct. Colulus moderately darkened. ALS and both segments of PLS darkened.

Distribution.—Reported from several localities in the states of Chiapas and Oaxaca (Mexico).

Comments.—Males and females have never been collected together. However, based on their morphological similarity and the collection site being within the distribution range of the females, the male from Laguna Bélgica Educational Park, 16 km NW. of Ocozocoautla de Espinosa, is tentatively placed in this species.

Eratigena yarini sp. nov.
http://zoobank.org/?lsid=urn:lsid:zoobank.org:act:FAFC2F99-20AC-439C-B177-E767115CA13B
Figs. 54–65

Type material.—*Holotype female*. MEXICO: *Veracruz*: Pico de Orizaba Volcano, Atotonilco de Calcahualco, plot 1, 2300 m, 24 February 2013, Lab. Araenologia, F. Alvarez Padilla (FC-UNAM: AB1342).

Paratypes. MEXICO: *Veracruz*: 1 ♂, same data as holotype (FC-UNAM: AB1341); 1 ♂, 1 ♀, same data (NMB-ARAN-27503 to 27504: AB1332, AB1334: accession-nr. LN887162, LN887181).

Other material examined.—MEXICO: *Oaxaca*: 1 ♀, “El Cumbre” on ridge E. of Cerro San Felipe, 2438 m, 28 September 1961, C.M. & M.R. Bogert (AMNH: AB1124).

Etymology.—The specific name is a patronym dedicated to Yarin Bolzern, the second born child of the first author.

Diagnosis.—*E. yarini* sp. nov. specimens differ from others of the group by the smaller size (CL shorter than 3.0 mm; all others longer than 3.5 mm). Males differ by the c-shaped subtegular sperm duct (arrow in Fig. 64; rather than s-shaped), females by the only flattened copulatory duct (Figs. 59–61; rather than single or double coiled).

Description.—*Measurements:* Male (paratype): CL 1.9, CW 1.5, STL 1.97, STW 1.93, OL 2.04, OW 1.26. Leg I (2.5, 1.0, 2.23, 2.02, 1.42), II (2.04, 0.68, 1.64, 1.78, 1.26), III (1.9, 0.62, 1.34, 1.8, 1.1), IV (2.67, 0.733, 2.2, 2.67, 1.4), Pedipalp (0.78, 0.32, 0.44, 0.68), bulbL 0.4. Female (holotype): CL 2.53, CW 1.83, STL 1.12, STW 1.14, OL 3.0, OW 2.12. Leg I (2.67, 0.87, 2.4, 2.4, 1.67), II (2.4, 0.7, 1.68, 1.88, 1.1), III (2.1, 0.68, 1.54, 1.9, 1.2), IV (2.87, 0.8, 2.28, 3.03, 1.3). Pedipalp (0.96, 0.42, 0.64, 1.08). EPL 0.38, EPW 0.58. Eyes: eye rows moderately procurved (Fig. 55). PME 0.1, PLE 0.12 , AME 0.08, ALE 0.1. Eye distances: PME–PME 0.5–1 x PME, PME–AME 0.5–1 x PME, PME–PLE 0.5–1 x PME, PME–ALE 1 x PME, AME–AME <0.5 x AME, AME–ALE <0.5 x AME. CLY1 2 x AME, CLY2 0.5–1 x ALE. *Male pedipalp:* RTA with two branches, lateral branch triangular, protruding, dorsal branch strongly sclerotized, narrow finger shaped, sharply pointed (Fig. 65). Short dorsal spike on palpal tibia absent. Embolus length about 2 x CB, originating at 8 o’clock position, distal tip at 4 o’clock position. Conductor lamelliform, distal portion distinctly elongated, lateral margin folded (Figs. 63–65). Terminal end of conductor strongly elongated, pointed. Transversal ridge of conductor expressed as hyaline ridge. Conductor membranously connected to tegulum. MA originating at 6 o’clock position, protruding, longer than wide, distal sclerite translucent, spoon-like (Figs. 63, 64). MA membranously connected to tegulum. *Epigyne and vulva*: Epigyne medially with a pale, hyaline area (Fig. 58). Posterior sclerite with anterior margin strongly concave, posterior membrane broadly notched (Fig. 61). CO anterolateral to posterior sclerite. Epigynal ‘pseudo teeth’ present, small (Fig. 62). Vulva consists of combined narrowly convoluted duct, CD flattened, medially elongated, without appendages, RC stronger sclerotized (Figs. 59–61). FD only represented by small, leaf-shaped appendages. *Other important characters*: Cheliceral promargin with 4, retromargin with 5 (male) or 6 (female) teeth, most proximal tooth smaller. Colulus developed as trapezoidal plate with distal margin w-shaped. PMS bearing one conspicuously prominent spigot. PLS with distal segment nearly as long as basal segment (Fig. 57). Trichobothria on cymbium and palpal tarsus absent. Tarsal trichobothria at leg I 5–6. Small teeth on paired claws of leg I 7. Leg spination: male pedipalp (2-0-0, 2-0-0, 1-2-0), female pedipalp (2-0-0, 2-0-0, 2-2-0), leg femora (2-2-0-0, 2-0-0-0, 2-0-1-0, 1-0-1-0), patellae (all 2-0-0), tibiae (2-0-0-1+1p,2-1-0-2p, 2-2-1-3, 2-2-2-3), metatarsi (0-0-0-3p+1, 0-1-0-3p+1, 0-3-2-1p+1+2p+1, 0-3-2-1p+1+2p+1), tarsi (0, 0, 0-1-2-0, 0-2-3-0). *Coloration*: Carapace and head region with two broad longitudinal symmetrical dark bands, with triangular darker spots (Fig. 54). Chelicerae frontally with indistinct dark patches (Fig. 55). Sternum darkened, distinct pale median band, laterally with indistinct paler spots (Fig. 56). Opisthosoma dark, brownish, sprinkled with small pale spots, indistinct pale median band, posteriorly with yellowish chevrons, indistinct (Fig. 54). Leg femora broad but moderately annulated, other segments moderately annulated, tarsi pale. Colulus, ALS and PLS distinctly darkened (Fig. 57).

Distribution.—Reported only from the state of Veracruz (the type locality) and one locality in the state of Oaxaca (Mexico).

THE *MEXICANA*-GROUP

The *mexicana*-group comprises 12 species: *E. blanda* (Gertsch, 1971) comb. nov., *E. caverna* (Gertsch, 1971) comb. nov., *E. decora* (Gertsch, 1971) comb. nov., *E. fernandoi* sp. nov., *E. gertschi* (Roth, 1968) comb. nov., *E. guanato* sp. nov., *E. mexicana* (Roth, 1968) comb. nov., *E. queretaro* sp. nov., *E. rothi* (Gertsch, 1971) comb., nov., *E. selva* (Roth, 1968) comb. nov., *E. tlaxcala* (Roth, 1968) comb. nov., and *E. xilitla* sp. nov. The only moderately elongated distal portion of the conductor (Figs. 79, 82, 94, 112, 136, 142, 160, 166, 175, 187, 196, 208) and the short, straight copulatory duct with mostly distinct appendages (Figs. 73, 87, 101, 124, 133, 147, 149, 158, 185, 192, 206, 218) separate them from specimens of the *flexuosa*-group.

Eratigena blanda (Gertsch, 1971), comb. nov.
Figs. 66–71

Tegenaria blanda Gertsch, 1971: 105.

Type material.—*Holotype female*. MEXICO: *Tamaulipas*: El Porvenir, Cueva de la Capilla, 13.5 km NW Gómez Farías, 28 January 1969, J. Reddell, R. Mitchell, F. Rose, J. George (AMNH).

Other material examined.—MEXICO: *Tamaulipas*: 1 ♀, Gómez Farías, Cueva de la Perra, 15 mi. NW Gómez Farías, 2164 m, 28 January 1968, J. Reddell, R. Mitchell, F. Rose, J. George (AMNH: AB1153).

Diagnosis.—Females of *E. blanda* differ from all other Nearctic *Eratigena* species in having moderately reduced eyes (Fig. 66; rather than strongly reduced eyes in *E. caverna*, eyes normally developed in all other species).

Description.—Essential information was provided by Gertsch (1971).

Distribution.—Reported from two caves in the state of Tamaulipas (Mexico).

Eratigena caverna (Gertsch, 1971), comb. nov.
Figs. 7, 81–89

Tegenaria caverna Gertsch, 1971: 106, figs. 158–160.

Type material.—*Holotype male*. MEXICO: *Queretaro*: Peñamiller, Cueva Puerto del Léon, 6.5 km SE Río Blanco, 9 July 1967, J. Reddell, J. Fish, P. Russell (AMNH: AB1156).

Paratypes. MEXICO: *Queretaro*: 2 ♀ allotypes, same data as holotype (AMNH: AB1156).

Other material examined.—MEXICO: *Queretaro*: 5 juv., same data as holotype except deep inside cave, 2484 m, 14 October 2014, A. Bolzern, E. González Santillán (NMB-ARAN-27505 to 27507: AB1244, AB1305, AB1284: accession-nr. LN887148, LN887187).

Diagnosis.—Male and female *E. caverna* specimens differ from all other West Nearctic *Eratigena* species by having strongly reduced eyes (Fig. 84; rather than moderately reduced in *E. blanda*, eyes normally developed in all other species).

Description.—Essential information was provided by Gertsch (1971).

Distribution.—Reported only from a cave near Río Blanco in the state of Queretaro (Mexico).

Comments.—Specimens could not be detected at the entrance of the cave but only very deep inside the cave. There, they were quite abundant, building their webs (Fig. 7) between large rocks which covered the lower part of the cave. Interestingly, there was no tube- or funnel-shaped retreat detectable in their webs. The spiders were just sitting in the middle of their web on a circular, more densely woven patch.

Eratigena decora (Gertsch, 1971), comb. nov.
Figs. 4, 5, 90–101

Tegenaria decora Gertsch, 1971: 104, figs. 164, 165.

Type material.—*Holotype male*. MEXICO: *San Luis Potosí*: Cueva de Potrerillos, 1.5 km W. of Ahuacatlán, 12 July 1967, J. Reddell, J. Fish, P. Russell (AMNH).

Paratypes. MEXICO: *San Luis Potosí*: 7 ♀, same data as holotype (AMNH: AB1167).

Other material examined.—MEXICO: *San Luis Potosí*: 1 ♂, 1 ♀, Xilitla, Ahuacatlán, ESE. of Potrerillos, Cueva de Potrerillos, 1181 m, cave entrance with tropical forest in the middle of pasture land, at rock faces and woody vegetation, 12 October 2014, A. Bolzern, E. González Santillán (NMB-ARAN-27508: AB1237: accession-nr. LN887149); 2 ♂, 5 ♀, 3 juv., same data (FC-UNAM: AB1240, AB1280).

Diagnosis.—Female *E. decora* specimen differ from all others of the group in having elongated appendages at the genital duct (Figs. 99–101). Males are similar to *E. guanato* sp. nov., *E. queretaro* sp. nov., *E. rothi* and *E. selva* in having at least a moderately pointed distal sclerite of the MA (Figs. 93, 95). They differ from *E. guanato* sp. nov., *E. rothi* and *E. selva* in having a relatively slim, finger-shaped and simply pointed dorsal branch of the RTA (rather than distally hook-shaped in *E. quanato* sp., nov. strong and basally bent in *E. rothi* and *E. selva*), and from *E. queretaro* sp. nov. in having a subtriangular, moderately pointed distal sclerite of the MA (rather than triangular and sharply pointed).

Description.—Essential information was provided by Gertsch (1971).

Distribution.—Reported only from one cave in the state of San Luis Potosí (Mexico).

Comments.—In 2014, specimens of *E. decora* were collected at the entrance of Cueva de Potrerillos (Figs. 4, 5), the type locality. Interestingly, this cave entrance, a large woody hole, is located in the middle of pasture land, surrounded by cattle and secured by a fence. It is remarkable that the webs of this species were also attached to the woody vegetation, and not exclusively to rocks (Fig. 5).

Eratigena fernandoi sp. nov.
http://zoobank.org/?lsid=urn:lsid:zoobank.org:act:19066CF1-0625-4D40-8FB7-35E0CF74AD8B
Figs. 102–113

Type material.—*Holotype male*. MEXICO: *Veracruz*: Atotonilco de Calcahualco, Pico de Orizaba Volcano, plot 2, 24 February 2013, Lab. Aracnologia FC-UNAM (FC-UNAM: AB1335: accession-nr. LN887152, LN887175).

Paratypes. MEXICO: *Veracruz*: 1 ♀, same data as holotype except 14 February 2012 (FC-UNAM: AB1333).

Other material examined.—MEXICO: *Veracruz*: 3 ♂, Huatusco, 7 km E Huatusco, cloud forest, 22 Jun 1983, S. & J. Peck (AMNH: AB1137).

Etymology.—The specific name is a patronym in honor of Fernando Alvarez Padilla, a Mexican arachnologist and active and strong supporter of the current work.

Diagnosis.—Male and female of *E. fernandoi* sp. nov. differ from related species in having a distinct pale patch only at the anterior half of the sternum (Fig. 103). Males are most similar to *E. gertschi* in having the posterior sclerite of the MA broadly spoon-shaped and distally rounded (rather than distally pointed in *E. decora*, *E. guanato* sp. nov., *E. rothi* and *E. selva*), but differ from that species in having the distal segment of the PLS as long as the basal segment (Fig. 104; rather than distal segment longer than basal segment), and the spermatic duct of the tegulum without a distinct curve (arrow in Fig. 111; rather than distinctly curved). Females differ by the semicircular posterior sclerite (Fig. 105), and the anteriorly differently convoluted genital ducts (Fig. 106).

Description.—*Measurements:* Male (holotype): CL 2.26, CW 1.7, STL 1.06, STW 1.14, OL 3.0, OW 1.74. Leg I (4.0, 0.93, 3.8, 3.8, 2.33), II (3.57, 0.9, 2.97, 3.6, 2.03), III (3.13, 0.8, 2.63, 3.43, 1.7), IV (3.93, 0.93, 3.43, 4.35, 2.1), Pedipalp (1.2, 0.42, 0.68, 1.03), bulbL 0.44. Female (paratype): CL 3.2, CW 2.4, STL 1.8, STW 1.8, OL 3.3, OW 2.47. Leg I (4.25, 1.1, 3.75, 3.95, 2.3), II (3.87, 1.1, 3.23, 3.6, 1.76), III (3.3, 1.0, 2.73, 3.47, 1.6), IV (4.25, 1.0, 3.7, 4.65, 1.92). Pedipalp (1.36, 0.56, 0.94, 1.11). EPL 0.33, EPW 0.54. Eyes: anterior eye row straight, posterior moderately procurved (Fig. 102). PME 0.13, PLE 0.14 , AME 0.12, ALE 0.17. Eye distances: PME–PME 1 x PME, PME–AME 0.5–0.75 x PME, PME–PLE 1 x PME,

PME–ALE 1.25 x PME, AME–AME 0.5–0.75 x AME, AME–ALE 0.5 x AME. CLY1 2 x AME, CLY2 1.5 x ALE. *Male pedipalp:* RTA with two branches, lateral branch simple, lobe-like, moderately protruding, dorsal branch strongly sclerotized, narrow finger shaped, sharply pointed (broken off in Figs. 112, 113). Short dorsal spike on palpal tibia absent. Embolus length about 1.5 x CB, originating at 9–10 o'clock position, distal tip at 4 o'clock position. Conductor lamelliform, distal portion only moderately elongated, lateral margin folded (Figs. 112, 113). Terminal end of conductor strongly elongated, pointed. Transversal ridge of conductor expressed as hyaline ridge (Figs. 111, 112). Conductor membranously connected to tegulum. MA originating at 5 o'clock position, protruding, longer than wide, distal sclerite translucent, broad spoon shaped. MA membranously connected to tegulum. *Epigyne and vulva*: Epigyne medially with a pale, hyaline area, oval (Fig. 105). Posterior sclerite protruding anteroventral as moderately sclerotized bar with anterior margin concave (semicircular, Fig. 105), posterior membrane notched (Fig. 106). CO anterolateral to posterior sclerite. Epigynal 'pseudo teeth' present, small. Vulva consists of combined narrowly convoluted duct, CD less sclerotized, with indistinct appendages, RC stronger sclerotized (Figs. 106, 107). FD only represented by small, leaf-shaped appendages. *Other important characters*: Cheliceral promargin with 4, retromargin with 6 small teeth in two separated groups of 3, most proximal tooth smaller. Colulus developed as trapezoidal plate with distal margin moderately w-shaped (Fig. 104). PMS bearing one conspicuously prominent spigot. PLS with distal segment nearly as long as basal segment (Fig. 104). Trichobothria on cymbium and palpal tarsus absent. Tarsal trichobothria at leg I 6. Small teeth on paired claws of leg I 7–10. Leg spination: male pedipalp (2-0-0, 2-0-0, 1-2-0), female pedipalp (3-0-0, 2-0-0, 2-2-0), leg femora (1-2-0-0 or 1-3-1-0, 1-2-2-0 or 1-1-2-0, 1-0-2-0 or 1-2-2-0, 1-0-2-0), patellae (all 2-0-0), tibiae (0-1-0-1 or 1-1-0-1, 0-1-0-1 or 1-1-0-1, 2-1-1-1 or 2-2-1-2, 2-2-2-3), metatarsi (0-0-0-4p+1, 0-0-0-4p+1 or 0-1-0-4p+1, 0-2-2-4p+1 or 0-3-3-4p+1, 0-3-3-4p+1), tarsi (0, 0, 0-0-1-0, 0-1-3-0 or 0-2-2-0). *Coloration*: Carapace with two longitudinal symmetrical dark bands, irregularly expressed, margins narrowly darkened, head region dorsolaterally with two distinct, longitudinally curved dark bands (Fig. 109). Chelicerae frontally with distinct dark patches (Fig. 102). Sternum darkened, anterior half with pale median band (Fig. 103). Opisthosoma greenish to dark gray, without reddish pigments, indistinct yellowish median band, anteriorly bordered by dark bands, posteriorly with yellowish chevrons, indistinct (Fig. 109). Legs irregularly but distinctly annulated. Colulus completely darkened. ALS moderately, basal segment of PLS distinctly darkened, distal segment of PLS only proximal half darkened.

Distribution.—Reported only from two localities in the state of Veracruz (Mexico).

Eratigena gertschi (Roth, 1968), comb. nov.
Figs. 114–125, cf. *gertschi* Figs. 72–80

Tegenaria mexicana gertschi Roth, 1968: 22, fig. 27.
Tegenaria gertschi Roth: Brignoli, 1974: 230.

Type material.—*Holotype male*. MEXICO: *Nuevo León*: Resumidero (cave) de Pablillo at Hacienda Pablillo, 30 km south of Galeana, 4 June 1966, J. Reddell, D. McKenzie (AMNH).

Other material examined (of *E. gertschi* s. s.).—MEXICO: *Nuevo León*: 1 ♀, Monterrey, Chipinque Mesa, small caves, 1645 m, 24 June 1969, S. & J. Peck, R. Norten (AMNH: AB1106). *Tamaulipas*: 2 ♀, Gómez Farías, 6 miles NW. of Gómez Farías, mine cave, March 1969, J. Reddell, C. Tucker (AMNH: AB1161); 1 ♀, Rancho del Cielo, mine cave, 3 June 1967, R. Mitchell (AMNH: AB1135); 1 ♀, same data except 10 January 1971, J. Reddell (AMNH: AB1163).

Other material examined (of *E.* cf. *gertschi*).—MEXICO: *Tamaulipas*: 1 ♀, Ejido Conrado Castillo, Cerro Zapatero, Cueva del Coral, 19 March 1979, D. Pate, J. Atkinson, M. Shumate (AMNH, AB1102); 1 ♂, San Juan, La Cueva sin Nombra, 4 June 1967, R. Mitchell (AMNH: AB1165); 1 ♂, Sótano de Monumento, 26 km WNW of Ocampo, near Allende, 5 September 1979, W.R. Elliott, D.C. Rudolph (AMNH: AB1142).

Diagnosis.—Male and female of *E. gertschi* are similar to *E. mexicana* in having the distal segment of the PLS twice as long as the basal segment (Fig. 118; *E. xilitla* sp. nov. with distal to basal segment 3/2). Males differ from *E. mexicana* by the normal proportions of the palpal femur and tibia (Fig. 117; rather than both strongly elongated), females in having an only moderately elevated and medially notched posterior membrane (Fig. 125; rather than strongly elevated). Males of *E. gertschi* are similar to *E. fernandoi* sp. nov. in having the posterior sclerite of the MA broadly spoon-shaped and distally rounded (Fig. 116; rather than distally pointed in *E. decora*, *E. guanato* sp. nov., *E. rothi* and *E. selva*), but differ from this species in having the spermatic duct of the tegulum distinctly curved (arrow in Fig. 114; rather than without distinct curve). Females are similar to specimens of *E. guanato* sp. nov., *E. rothi, E. tlaxcala,* and *E. xilitla* sp. nov. but differ from *E. guanato* sp. nov. in having the posterior sclerite not dumbbell-shaped (Fig. 122), from *E. rothi* and *E. xilitla* sp. nov. in having the AME only as large as the PME, and from *E. tlaxcala* by the terminal part of the vulva (Figs. 123, 124).

Description.—Essential information for the male was provided by Roth (1968: 22–23). *Measurements:* Female (AB1106): CL 4.1, CW 3.1, STL 1.9, STW 1.72, OL 5.25, OW 3.6. Leg I (6.45, 1.7, 6.1, 6.2, 2.65), II (5.6, 1.45, 4.55, 5.2, 2.25), III (5.05, 1.25, 3.95, 5.2, 2.05), IV (6.5, 1.57, 5.55, 7.25, 2.5). Pedipalp (2.17, 0.8, 1.33, 1.97). EPL 0.43, EPW 0.81. Eyes: anterior eye row straight, posterior eye row moderately procurved. PME 0.18, PLE 0.23, AME 0.14, ALE 0.21. Eye distances: PME–PME 1.5 x PME, PME–AME 1.25 x PME, PME–PLE 1.25 x PME, PME–ALE 1.5 x PME, AME–AME 0.75–1 x AME, AME–ALE 0.8 x AME. CLY1 2.5 x AME, CLY2 1.3 x ALE. *Epigyne and vulva*: Epigyne medially with a pale, hyaline area (Fig. 122). Posterior sclerite protruding anteroventral as moderately sclerotized bar with anterior margin concave (Figs. 122, 125), posterior membrane notched (Fig. 125). CO laterally of posterior sclerite. Epigynal 'pseudo teeth' present, small (Fig. 122). Vulva consists of combined narrowly convoluted duct, CD less sclerotized, with appendages (Figs. 124, 125), RC stronger sclerotized, terminally strongly convoluted (Figs. 123, 124). FD only represented by small, leaf-shaped appendages. *Other important characters*: Cheliceral promargin with 4, retromargin with 6 teeth, more proximally, the teeth become smaller. Colulus developed as trapezoidal plate with distal margin w-shaped. PMS bearing one conspicuously prominent spigot. PLS with distal segment twice as long as basal segment (Fig. 118). Trichobothria on cymbium and palpal tarsus absent. Tarsal trichobothria at leg I 7. Small teeth on paired claws of leg I 10–11. Leg spination: female pedipalp (0-0-0 or 1-0-0, 2-0-0, 2-1+1p-0), leg femora (1-2-0-0, 1-1-1-0, 1-0-0-0, 1-0-0-0), patellae (all 2-0-0), tibiae (0-0-0-0, 0-0-0-0, 0-0-0-0 or 2-0-0-0, 2-0-0-1), metatarsi (0-0-0-4p+1, 0-1-0-4p+1, 0-2-3-4p+1, 0-2-3-4p+1), tarsi (0, 0, 0, 0-0-1-0). *Coloration*: Carapace with two longitudinal symmetrical dark bands, irregularly expressed, margins narrowly darkened, head region darker, laterally with indistinct dark patches (Fig. 121). Chelicerae frontally without dark patches. Sternum darkened, medially moderately paler (Fig. 119). Opisthosoma dark grayish, without red pigments, anteriorly with dark patch, bordered by yellowish bands, posteriorly with yellowish chevrons (Fig. 120). Legs very indistinctly annulated. Colulus pale. ALS pale, basal segment of PLS darkened, distal segment of PLS only proximally darkened (2/3).

Distribution.—Reported from localities in the states of Nuevo León and Tamaulipas (Mexico).

Comments.—One female and two males from different localities in Tamaulipas differ from *E. gertschi* s. s. by the different vulva with an apparently fused duct (Figs. 73, 74), and the narrow and pointed distal sclerite of the MA (Figs. 78–80). Due to the fact that: (i) the species group in focus comprises a complex of very closely related species, (ii) the males and female were not collected at the same locality and (iii) only one female is available, these morphs are not described as a new species and treated here as *E.* cf. *gertschi*.

Eratigena guanato sp. nov.
http://zoobank.org/?lsid=urn:lsid:zoobank.org:act:9AC79754-8337-4AC5-97A2-387C757A78C2
Figs. 126–137

Type material.—*Holotype female*. MEXICO: *Guanajuato*: Guanajuato, at road 110 from Dolores Hidalgo to Guanajuato, 1 km N of Santa Rosa de Lima, 2510 m, oak forest, 16 October 2014, A. Bolzern, E. González Santillán (FC-UNAM: AB1260).

Paratypes. MEXICO: *Guanajuato*: 5 juv., same data as holotype (FC-UNAM: AB1260); 3 ♀, 3 juv., same data (NMB-ARAN-27509: AB1243: accession-nr. LN887176).

Other material examined (of *E. guanato* s. s.).—MEXICO: *Unknown:* 1 ♀, 280 Cueva las Calevas, 6 April 1941, Mich (AMNH: AB1130). *Colima*: 1 ♀, Nevado de Colima, 20 January 1943, F. Bonet (AMNH: AB1126). *Jalico:* 1 ♀, Mascota, km 21at street from Mascota to Puerto Vallarta, 1662 m, pine forest, night catch, 1 April 2012, L. Olguin, J. Mendoza, G. Contreraz, C. Santibañez, D. Ortiz (CNAN). *Michoacán:* 1 ♂, Basencheve National Park, 7 May 1963, W.J. Gertsch, W. Ivie (AMNH: AB1103); 1 ♀, Garnica Pass, 2834 m, 8 May 1963, W.J. Gertsch, W. Ivie (AMNH: AB1127); 1 ♀, Cd. Hidalgo, Gruta de Tziranda, 1855 m, 29 April 2011, A. Valdez, O. Francke, J.A. Cruz, R. Monjaraz, E. Miranda (CNAN); 1 ♀, Zitacuaro, ca. 30 km SE of Zitacuaro, Butterfly forest, 2896 m, 16 December 2011, S. Huber (NMB-ARAN-27510: AB1089).

Other material examined (of *E.* cf. *guanato*).—MEXICO: *Hidalgo*: 2 ♀, 5 miles SW. of Jacala, 21 April 1963, W.J. Gertsch, W. Ivie (AMNH: 1176). *Michoacán*: 1 ♀, Coalcomán, Cueva de Cascada Chica, 10 km NE Coalcomán de Matamoros, 1356 m, 1 May 1984, L. Elliott, D. McKenzie (AMNH: AB1100); 1 ♀, 15 km NE. of Coalcomán de Matamoros, Cueva de Torrecillas, 2 May 1984, D. McKenzie, L. Elliot (AMNH: AB1108).

Etymology.—The specific name is a noun in apposition shortened from the type locality.

Diagnosis.—Males of *E. guanato* sp. nov. can be separated from all other related species by the distally hook-shaped dorsal branch of the RTA (Fig. 136), and the lateral margin folded only towards the terminal end of the distal portion of the conductor (arrow in Fig. 136). Females are similar to specimens of *E. gertschi, E. rothi, E. tlaxcala,* and *E. xilitla* sp. nov. but differ in having the posterior sclerite distinctly dumbbell-shaped (Figs. 130, 131; rather than posterior margin almost straight), and differ from *E. rothi* and *E. xilitla* sp. nov. in having the AME only as large as the PME, and differ from *E. gertschi* in having the distal segment of the PMS not twice as long as the basal segment (Fig. 129).

Description.—*Measurements:* Male (AB1127): CL 2.73, CW 2.2, STL 1.2, STW 1.22, OL 2.93, OW 1.83. Leg I (3.73, 0.92, 3.4, 3.7, 2.23), II (3.33, 0.87, 2.9, 3.47, 2.13), III (3.2, 0.8, 2.44, 3.37, 2.1), IV (3.7, 0.84, 3.56, 4.5, 2.4), Pedipalp (1.22, 0.42, 0.72, 1.1), bulbL 0.52. Female (holotype): CL 3.53, CW 2.6, STL 1.6, STW 1.58, OL 4.95, OW 3.75. Leg I (4.45, 1.35, 3.85, 3.9, 2.0), II (4.0, 1.2, 3.5, 3.73, 1.87), III (3.6, 1.15, 2.8, 3.6, 1.73), IV (4.7, 1.2, 4.05, 5.15, 2.0). Pedipalp (1.6, 0.733, 1.03, 1.47). EPL 0.33, EPW 0.58. Eyes: anterior eye row straight, posterior moderately procurved (Fig. 127). PME 0.19, PLE 0.21, AME 0.17, ALE 0.19. Eye distances: PME–PME 1 x PME, PME–AME 0.8–1 x PME, PME–PLE 1 x PME, PME–ALE 1.2 x PME, AME–AME 1 x AME, AME–ALE 0.5–0.75 x AME. CLY1 2–2.5 x AME, CLY2 1.2–1.5 x ALE. *Male pedipalp:* RTA with two branches, lateral branch simple, broadly lobe-like, dorsal branch distally hook-shaped (Fig. 136). Short dorsal spike on palpal tibia absent. Embolus length about 1.5 x CB, originating at 10 o'clock position, distal tip at 4 o'clock position. Conductor lamelliform, distal portion only moderately elongated, lateral margin only moderately folded towards terminal end (arrow in Fig. 136). Terminal end of conductor strongly elongated, pointed. Transversal ridge of conductor expressed as hyaline ridge, indistinct. Conductor membranously connected to tegulum. MA originating at 6–7 o'clock position, protruding, longer than wide, distal sclerite translucent, subtriangular, moderately pointed. MA membranously connected to tegulum. *Epigyne and vulva*: Epigynal hyaline area with anterior border m-shaped (Fig. 105). Posterior sclerite protruding anteroventrally as dumbbell-shaped moderately sclerotized bar (Figs. 130, 131), posterior membrane moderately protruding anteriad (Fig. 134). CO anterolateral to posterior sclerite. Epigynal 'pseudo teeth' prominent (Fig. 131). Vulva consists of combined narrowly convoluted duct, CD less sclerotized, with distinct appendages, RC stronger sclerotized (Figs. 133, 134). FD only represented by small, leaf-shaped appendages. *Other important characters*: Cheliceral promargin with 4, retromargin with7 small teeth, more proximally, the teeth become smaller. Colulus developed as trapezoidal plate with distal margin moderately w-shaped. PMS bearing one conspicuously prominent spigot. PLS with distal segment longer than basal segment (4/3; Fig. 129). Tarsal trichobothria at leg I 8. Small teeth on paired claws of leg I 11. Leg spination: male pedipalp (3-0-0, 2-0-0, 1-1+1p-0), female pedipalp (2-0-0, 2-0-0, 2-1+1p-0), leg femora (1-3-1-0 or 1-1-3-0 in male, 1-2-1-0 or 1-2-3-0 in male, 1-1-1-0 or 1-4-3-0 in male, 1-0-1-0 or 1-2-1-0 in male), patellae (all 2-0-0), tibiae (0-0-0-0 or 1-0-0-0 or 0-0-0-1 in male, 1-0-0-0 or 1-1-0-1 in male, 2-1-0-1 or 2-2-2-3p in male, 2-1-0-1 or 2-2-2-1p+1+2p in male), metatarsi (0-0-0-4p+1 or 0-0-2-2p+2+1p+1 in male, 0-0-0-4p+1 or 0-2-0-4p+1 in male, 0-3-2-4p+1, 0-3-2-4p+1 or 0-4-4-1+4p+1 in male), tarsi (0, 0, 0-0-1-0 or 0-0-2-0 in male, 0-0-1-0 or 0-0-2-0 in male). *Coloration*: Carapace with two longitudinal symmetrical dark bands, irregularly expressed, margins narrowly to broadly darkened (Fig. 126). Chelicerae frontally with indistinct dark patches (Fig. 127). Sternum darkened, with pale median band, midway interrupted, posteriorly with black patch (Fig. 128). Opisthosoma grayish with dark spots, without reddish pigments, indistinct grayish median band, anteriorly with dark fork-shaped patch, posteriorly with grayish chevrons (Fig. 126). Legs distinctly annulated. Colulus medially and laterally with dark patches. ALS basally darkened, basal segment of PLS darkened, distal segment of PLS only proximal half darkened.

Distribution.—Reported from four states of East-Central Mexico: Colima, Guanajuato, Jalisco and Michoacán.

Comments.—Male and female specimens were not collected together and show moderate morphological differences (e.g., size, leg spination) and are therefore only tentatively placed in the same species. The females collected close to Jacala and Coalcomán show some morphological differences to the type specimens. If these differences are part of intraspecific variation or a closely related taxa cannot satisfyingly be judged here. Therefore, the identification of these specimens remains uncertain.

Eratigena mexicana (Roth, 1968), comb. nov.
Figs. 138–149

Tegenaria flexuosa Roth, 1952: 285, figs. 1, 2 (in part, misidentified female).
Tegenaria mexicana Roth, 1968: 15, figs. 21–26.

Type material.—*Holotype male*. MEXICO: *Guerrero*: Taxco, in cave, 29 July 1956, V. Roth, W. Gertsch (AMNH).

Paratypes. 1 ♀ allotype, same data as holotype (AMNH); 2 ♂, same data (AMNH: AB1178); 5 ♂, same data except 28 July 1956 (AMNH: AB1154, AB1179); 1 ♂, Taxco, 1 October 1945, L. Isaacs (AMNH: AB1177).

Other material examined (of *E. mexicana* s. s.).—MEXICO: *Guerrero*: 1 ♂, Grutas de Acuitlapan, 10 mi. E of Taxco, 9 April 1968, W. Calvert (AMNH: AB1105); 1 ♂, 4 ♀, 1 juv., Taxco de Alarcón, E of Taxco, 1611 m, tropical forest, at stones and at rock faces near street (terrain break), 5 October 2014, A. Bolzern, E. González Santillán (NMB-ARAN-27511 to 27514: AB1217, AB1232, AB1247, AB1216: accession-nr. LN887153, LN887188); 4 ♀, 4 juv., same data except 1670 m, at rock faces near street (terrain break) (FC-UNAM: AB1206, AB1285); 1 ♀, same data except, W. of Colonia la Quebradora, 1825 m, secondary oak-pine forest, open, reddish stones, 1670 m (FC-UNAM: AB1273); 1 ♀, Taxco de Alarcón, Parque el Huixteco, 2434 m, pine-oak forest, 22 August 2013, H.E. León (NMB-ARAN-27515: AB1323). *México*: 1 ♀, Tenancingo, Tenancingo de Degollado, 2050 m, 7 October 1946, H. Wagner (AMNH: AB1129).

Other material examined (of *E.* cf. *mexicana*).—MEXICO: *Morelos*: 1 ♀, Cuernavaca, 1700 m, 1 September 1941, H. Wagner (AMNH: AB1128); 3 ♀, Cuernavaca, in shallow cave near town, 31 July 1956, W.J. Gertsch, V. Roth (AMNH: AB1123); 6 ♀, San Sebastian, north of Oaxtepec, 1874 m, old train tunnel, 16 December 2011, S. Huber (NMB-ARAN-27516: AB1091).

Diagnosis.—Male *E. mexicana* specimens differ from all Nearctic *Eratigena* species in having a distinctly elongated palpal femur and tibia (Fig. 140). Females are similar to *E. xilitla* sp. nov. and differ from other species in having the posterior membrane (internal posterior limitation of genital area) distinctly protruding anteriad (arrow in Fig. 148). They can be separated from *E. xilitla* sp. nov. specimens by having the posterior membrane without a notch and the AME diameter equal or smaller than that of the PME.

Description.—Essential information was provided by Roth (1968).

Distribution.—Reported from the states of Guerrero and México (Mexico). Reports from the state of Morelos are uncertain (see comment).

Comments.—The specimens from Morelos differ from typical *E. mexicana* specimens in having wider genital ducts (Fig. 149). Due to their affinity to *E. tlaxcala* (Figs. 203, 206) and the absence of males, the identification of these specimens remains uncertain.

Eratigena queretaro sp. nov.
http://zoobank.org/?lsid=urn:lsid:zoobank.org:act:853FD45F-18FF-4C3B-B2B4-F781C3CCC98F
Figs. 7, 150–161

Type material.—*Holotype female*. MEXICO: *Querétaro*: Pinal de Amoles, at road 120 between Jalpan de Serra and Pinal de Amoles, close to La Curva del Chuveje, 20 km W. of Jalpan, 1288 m, transitional forest, subtropical to mountainous, in tube with running water under road, 13 October 2014, A. Bolzern, E. González Santillán (FC-UNAM: AB1302).

Paratypes. 1 ♂, 1 ♀, same data as holotype (FC-UNAM: AB1302).

Other material examined.—MEXICO: *Querétaro*: 3 ♀, Pinal de Amoles, at road 120 between Jalpan de Serra and Pinal de Amoles, close to Puerto del Perico, 34 km W. of Jalpan, 2075 m, oak-pine forest, roadside cave, 14 October 2014, A. Bolzern, E. González Santillán (NMB-ARAN-27517: AB1258: accession-nr. LN887154, LN887177); 1 ♀, Peñamiller, at path from Río Blanco to Cueva Puerto del Léon, 2014 m, oak forest, 14 October 2014, A. Bolzern, E. González Santillán (NMB-ARAN-27518: AB1218: accession-nr. LN887155, LN887178).

Etymology.—The specific name is a noun in apposition taken from the type locality.

Diagnosis.—Female specimens of *E. queretaro* sp. nov. differ from all others of the group in having an hourglass-shaped posterior sclerite (Figs. 154, 155), and an anteriorly distinctly arcuate genital duct with prominent appendages

(Figs. 157, 158). Males are similar to *E. decora*, *E. guanato* sp. nov., *E. rothi* and *E. selva* in having at least a moderately pointed distal sclerite of the MA (Figs. 159, 161). They differ from *E. guanato* sp. nov., *E. rothi* and *E. selva* in having a relatively slim, finger-shaped and simply pointed dorsal branch at the RTA (Fig. 161; rather than distally hook-shaped in *E. quanato* sp. nov., strong and basally bent in *E. rothi* and *E. selva*), and from *E. decora* in having a triangular and sharply pointed distal selerite of the MA (rather than subtriangular, moderately pointed).

Description.—*Measurements:* Male (paratype): CL 2.56, CW 1.9, STL 1.2, STW 1.18, OL 2.77, OW 1.44. Leg I (4.3, 1.0, 4.2, 4.65, 2.55), II (3.7, 0.93, 3.25, 3.85, 2.1), III (3.43, 0.84, 3.0, 4.03, 2.0), IV (4.35, 0.93, 4.03, 5.4, 2.6), Pedipalp (1.1, 0.46, 0.58, 0.86), bulbL 0.4. Female (holotype): CL 3.17, CW 2.33, STL 1.42, STW 1.3, OL 3.85, OW 2.5. Leg I (3.88, 1.2, 3.87, 3.83, 2.17), II (3.53, 1.17, 2.9, 3.3, 1.9), III (3.18, 1.0, 2.53, 3.2, 1.73), IV (4.0, 1.6, 3.75, 4.45, 2.23). Pedipalp (1.26, 0.5, 0.88, 1.3). EPL 0.38, EPW 0.58. Eyes: eye rows moderately procurved (Fig. 151). PME 0.15, PLE 0.17 , AME 0.14, ALE 0.2. Eye distances: PME–PME 0.8 x PME, PME–AME 0.8 x PME, PME–PLE 0.8–1 x PME, PME–ALE 1 x PME, AME–AME 0.6 x AME, AME–ALE 0.4 x AME. CLY1 1.75 x AME, CLY2 1 x ALE. *Male pedipalp:* RTA with two branches, lateral branch broadly lobe-like, indistinctly protruding, dorsal branch strongly sclerotized, narrowly finger shaped and sharply pointed (Figs. 160, 161). Short dorsal spike on palpal tibia absent. Embolus length about 1.5 x CB, originating at 9 o'clock position, distal tip at 3–4 o'clock position. Conductor lamelliform, distal portion only moderately elongated, lateral margin folded (Figs. 160, 161). Terminal end of conductor strongly elongated, pointed. Transversal ridge of conductor expressed as hyaline ridge. Conductor membranously connected to tegulum. MA originating at 6 o'clock position, protruding, longer than wide, distal sclerite translucent, black, long triangular, pointed (Figs. 159–161). MA membranously connected to tegulum. *Epigyne and vulva*: Epigyne medially with a pale, narrow oval hyaline area. Posterior sclerite protruding anteroventrally as moderately selerotized bar, hourglass-shaped, anterolaterally not rounded (Figs. 154, 155), posterior membrane protruding anteriad (Fig. 158). CO anterolateral to posterior sclerite. Epigynal 'pseudo teeth' minute (Figs. 154–156). Vulva consists of combined narrowly convoluted duet, anterior distinctly arcuate, with distinct appendages (Figs. 157, 158), RC stronger sclerotized. FD only represented by small, leaf-shaped appendages. *Other important characters*: Chelieeral promargin with 4, retromargin with 8 small teeth, more proximally, the teeth become smaller. Colulus developed as trapezoidal plate with distal margin moderately w-shaped. PMS bearing one conspicuously prominent spigot. PLS with distal segment longer than basal segment (3/2; Fig. 153). Trichobothria on cymbium and palpal tarsus absent. Tarsal trichobothria at leg I 7–8. Small teeth on paired claws of leg I 9–10. Leg spination: male pedipalp (2-0-0, 2-0-0, 1-1+1p-0), female pedipalp (2-0-0, 2-0-0, 2-1+1p-0), leg femora (0-2-0-0 or 2-2-0-0 or 2-3-2-0, 2-1-1-0 or 2-1-0-0 or 2-3-2-0, 2-1-1-0 or 2-2-2-0, 1-0-2-0 or 2-1-1-0), patellae (all 2-0-0), tibiae (0-0-0-1 or 1-0-0-2 or 1-1-0-3p, 2-1-0-0 or 2-1-0-3p+1, 2-1-1-1 or 2-2-2-2+1p, 2-1-1-2 or 2-2-2-3+1p), metatarsi (0-0-0-4p+1, 0-0-0-4p+1 or 0-1-0-4p+1, 0-2-2-4p+1 or 0-3-2-4p+1, 0-3-2-4p+1 or 0-3-3-1p+1+2p+1), tarsi (0, 0, 0, 0-0-1-0 or 0-1-3-0). *Coloration*: Carapace with two well expressed longitudinal symmetrical dark bands, margins narrowly to broadly darkened, head region dorsolaterally with two distinct, longitudinally curved dark bands (Fig. 150). Chelicerae frontally with indistinct dark patches (Fig. 151). Sternum darkened, with pale median band, midway interrupted (Fig. 152). Opisthosoma grayish with dark spots, median band with reddish pigments, anteriorly with dark patch, posteriorly with chevrons (Fig. 150). Legs annulated, ventrally more distinctly expressed as dorsally. Colulus moderately darkened. ALS basally and laterally darkened, basal segment of PLS distinctly darkened, distal segment of PLS only proximal half darkened.

Distribution.—Reported from only a narrow area in the state of Querétaro (Mexico).

Comments.—Specimens of *E. queretaro* sp. nov. were collected at three different sites in a relatively narrow area. The most natural habitat was at the path from Río Blanco to the Cueva Puerto del Léon in an old oak forest. There, in a shady valley, the spiders built their webs between rocks near a small creek. In contrast, representatives of this species were also collected in a tube with running water under a road (Fig. 6) within an area with subtropical to mountainous transitional forest.

Eratigena rothi (Gertsch, 1971), comb. nov.
Figs. 162–173

Tegenaria rothi Gertsch, 1971: 107, figs. 161–163.

Type material.—*Holotype male*. MEXICO: *Hidalgo*: Cueva de El Ocote, 1.5 km N. of Palomas, 20 July 1956, V. Roth, W.J. Gertsch (AMNH).

Other material.—MEXICO: *Hidalgo*: 1 ♂, 4 ♀, Jacala, collected in cave at night, 20 July 1956, V. Roth, W.J. Gertsch (AMNH: AB1173); 1 ♂, 5 ♀, same data except roadside cave, 1 mile N. of Palomas (AMNH: AB1157, AB1172); 3 ♀, 10–25 miles S. of Jacala, 1 July 1956, V. Roth, W. Gertsch (AMNH: AB1170); 1 ♂, 6 ♀, same data except 20 July 1956 (AMNH: AB1174, AB1175); 2 ♂, Tlanchinol, 43 km SW. of Huejutla, 1500 m, cloud forest, 14 August 1983, S. & J. Peck (AMNH: AB1138); 2 ♀, 2 km N. of del Pinalito, El Cardenal, 2301 m, coniferous forest, day catch, 16 October 2009, O. Francke, R. Paredes, J. Cruz, T. López, T. Palafox, C. Santibáñez, A. Valdez (CNAN: AB1201); 3 ♀, 7 juv., Zimapán, at street from Morelos (Trancas) to Puerto de Piedra, 2405 m, pine forest, at terrain break near street, at rocks, 10 October 2014, A. Bolzern, E. González Santillán (FC-UNAM: AB1211, AB1221, AB1270); 2 ♀, Nicolás Flores, elose to El Encinote, at street from Morelos (Trancas) to Puerto de Piedra, 2557 m, pine forest, at terrain break near street, at rocks, 10 October 2014, A. Bolzern, E. González Santillán (FC-UNAM: AB1257, AB1297); 1 ♀, same data except Puerto de Piedra, Santa Cueva, 2498 m, at rocks at cave entrance (NMB-ARAN-27519: AB1298: accession-nr. LN887156, LN887189); 3 ♂, 7 ♀, 4 juv., Chapulhuacán, between Puerto Chaballo and Chapuluacán, near road 85, 1087 m, in tube with running water under road, 10 October 2014, A. Bolzern, E. González Santillán (NMB-ARAN-27520 to 27524: AB1212, AB1228, AB1241, AB1263, AB1210: accession-nr. LN887157, LN887190).

Diagnosis.—Male and female specimens of *E. rothi* are very similar to *E. xilitla* sp. nov. and differ from all other West Nearctic *Eratigena* species in having the AME larger than the PME. They differ from the sister species, *E. xilitla* sp. nov., in their larger size (CL longer than 4.5 mm; rather than smaller than 4 mm in *E. xilitla* sp. nov.). Males differ from *E. xilitla* sp. nov. by the shape of the distal sclerite of the MA (Fig. 167; long subtriangular and pointed, rather than spoon-shaped and rounded), and females differ by the shape of the posterior sclerite (Fig. 170).

Description.—Essential information was provided by Gertsch (1971).

Distribution.—Reported from several localities in the north-western part of the state of Hidalgo (Mexico).

Comments.—Morphologically, the two species *E. rothi* and *E. xilitla* sp. nov. are very closely related. This sister-species relationship is supported by the maximum likelihood tree based on mitochondrial sequences (Fig. 1). Specimens of *E. rothi* were collected during an excursion in 2014 from three different habitats: pine forest at terrain break, at a huge cave entrance between rocks and in a tube with running water under a road. *E. xilitla* sp. nov. seems to preferably inhabit oak-pine forests, but otherwise similar habitats.

Eratigena selva (Roth, 1968), comb. nov.
Figs. 174–194

Tegenaria mexicana selva Roth, 1968: 23, figs. 28, 29.
Tegenaria selva Roth: Gertsch, 1971: 105.

Type material.—*Holotype male*. MEXICO: *San Luis Potosí*: Cueva de la Selva, west of Xilitla on the Xilitla-Ahuacatlan road, north of Tamazunchale, 10 April 1966, T. Raines (AMNH).

Paratypes. 1 ♀ allotype, Sotano at Valle de los Fantasmas, 24 November 1966, J. Fish, J. Davis (AMNH: AB1131).

Other material examined.—MEXICO: *Hidalgo*: 1 ♂, Sótano de la Hoya de las Vigas, 1.5 km N Pinalito, 22 March 1981, J. Reddell, T. Archery (AMNH: AB1107); 1 ♀, La Sotono del Hondo de Pinalito, Hwy 85, 1 January 1976, C. Soileau, P. Strickkand (AMNH: AB1144). *San Luis Potosí*: 1 ♀, 5 km N Valle de Los Fantasmas, 40 km E Zaragoza, Cueva de la Laguna, 3000 m, 20 May 1972, Wm. Elliott, P. Lynn, R.M. McEachern (AMNH: AB1101); 1 ♂, Cueva Pueblo Ilamado, 58 km Mpio Villa de Zaragoza, 2298 m, pine-oak forest, date unknown, A. Valdez, O. Francke, J. Cruz, C. Santibáñez (CNAN: AB1197); 1 ♀, Gruta de los Muertes, Xilitla Plateau, 28 March 1900, D. Pate (AMNH: AB1158); 3 ♀, Sotana de La Silleta, 30 March 1980, D. Honea (AMNH, AB1109); 2 ♀, Municipio de Zaragoza, Cueva de los Caballos, 30 km E San Luis Potosí, 3000 m, 18 May 1972, Wm. Elliott (AMNH: AB1146); 4 ♀, Sierra del Pina, Microwave Tower Road, La Cueva de los Murcielagos, 29 December 1975, C. Soileau, P. Strickkand (AMNH: AB1147); 1 ♀, Sotano de Abernathy, W. of Valle de los Fantasmos, 30 January 1969, Wm. Elliott, D. Honea, M. Abernathy (AMNH: AB1160); 1 ♀, Sotano de Arañas, W of Valle de los Fantasmas, 29 January 1969, R. Harmon, J. Cepeda (AMNH: AB1132); 1 ♂, 3 ♀, Sotano de Golondrina, Puerto Altamira, 40 km E San Luis Potosi, 3000 m, 17 March 1972, Wm. Elliott, R. Mitchell, J.A.L. Cooke, G. Campell, G. Graves, M. Brownfield (AMNH: AB1151); 2 ♂, 1 ♀, Sotano de Las Golondrinas, Valle de los Fantasmos, 29 November 1968, Wm. Elliott, J. Jarl, S. Cathey, M. Burk (AMNH: AB1159); 2 ♀, Sotano de Ojo de Agua, 4 km S San Francisco, 30 November 1968, Wm. Elliott, J. Jarl (AMNH: AB1133); 2 ♀, Sotano Puerto de los Lobos, San Francisco, 14 September 1968, B. Elliott (AMNH: AB1134).

Diagnosis.—Male and female specimens of *E. selva* differ from all West Nearctic *Eratigena* species by their large size in combination with very long legs (CL $>$ 5 mm, patella-tibia length leg I $>$ 9 mm) and an indistinctly patterned abdomen (grayish). In addition, females differ by having a very strongly sclerotized epigynal posterior sclerite (Figs. 182, 191).

Description.—Essential information was provided by Roth (1968).

Distribution.—Reported from the north-western part of the state of Hidalgo and the state of San Luis Potosí (Mexico).

Comments.—Even though the type locality of *E. selva* (Cueva de la Selva, now called Cueva del Salitre) was revisited during an excursion in October 2014, no specimens or webs could be detected there.

The specimens from Sotano de Golondrina (AB1151) are morphologically very similar to typical *E. selva* specimens, but differ to some extent in epigynal and genital morphology (Figs. 186–188, 191–194). However, due to the lack of more information (more specimens with these features, DNA data) these specimens are here treated as a variation of *E. selva*.

Eratigena tlaxcala (Roth, 1968), comb. nov.
Figs. 195–206

Tegenaria mexicana tlaxcala Roth, 1968: 24.
Tegenaria tlaxcala Roth: Brignoli, 1974: 230.

Type material.—*Holotype male*. MEXICO: *Tlaxcala*: Tlaxcala, in underground water conduit, 26 July 1956, V. Roth, W. Gertsch (AMNH).

Paratypes. 1 ♀ allotype, same data as holotype (AMNH); 3 ♂, 1 ♀, same data (AMNH: AB1171).

Other material examined (of *E. tlaxcala* s. s.).—MEXICO: *Distrito Federal*: 1 ♀, Gustavo A. Madero, cañada hacia la cueva del Fraile, 2614 m, 25 June 2009, H. Montaño, A. Valdez, R. Paredes, T. Garrido (CNAN: CNAN-Ar009746). *México*: 1 ♂, 58 km E. of Mexico City, pine forest, under log, 24 July 1956, V. Roth, W. Gertsch (AMNH: AB1162). *Puebla*: 1 ♂, Huachinango, 4.4 miles SW. of Huachinango, 1700 m, moist ravine oak forest, malt traps, 25 July 1969, collector unknown (AMNH: AB1110); 1 ♂, pyramid at Cholula, 20 August 1965, J. Reddell, J. Fish, W. Bell (AMNH: AB1113); 1 ♀, San Pedro Cholula, at northern slope of hill NE. of Cholula, 2221 m, pine forest, small cave, 8 October 2014, A. Bolzern, E. González Santillán (NMB-ARAN-27525: AB1271: accession-nr. LN887159, LN887191); 1 ♀, W. of Rio Frio, 2956 m, 22 August 1964, W. & J. Ivie (AMNH: AB1111). *Tlaxcala*: 5 ♀, 2 juv., Tlaxcala, Ocatlán, Barage Chapitel, within city in an open space between houses, 2222 m, old manmade tunnel/cave under the city, at the entrance (which was a dump), 9 October 2014, A. Bolzern, E. González Santillán (FC-UNAM: AB1229, AB1242, AB1296; NMB-ARAN-27526: AB1233: accession-nr. LN887158, LN887192).

Other material examined (of *E.* cf. *tlaxcala*).—MEXICO: *Guerrero*: 1 ♂, Tetipan, 5 km E de Casahuates, 2275 m, pine-oak forest, 4 June 2010, O. Francke, D. Barrales, J. Cruz, A. Valdez (CNAN: AB1196).

Diagnosis.—Males of *E. tlaxcala* are similar to specimens of *E. caverna*, *E. fernandoi* sp. nov., *E. gertschi*, *E. selva* (variation) and *E. xilitla* sp. nov. and differ from other species in having a spoon-shaped, distally rounded distal sclerite (Fig. 195,197; rather than subtriangular or triangular and distally pointed). Males and females differ from *E. caverna* and *E. xilitla* sp. nov. in having normally developed eyes with the AME as large as the PME (Fig. 199; rather than all reduced in *E. caverna*, PME larger than AME in *E. xilitla* sp. nov.). Males differ from *E. fernandoi* sp. nov. and *E. gertschi* in having a narrow, distinctly longer then wide distal sclerite of the MA (Fig. 197; rather than broad), and from *E. selva* (variation) in having a conductor with an unevenly curved distal margin (arrow in Fig. 196; rather than evenly curved). Females are very similar to *E. gertschi, E. guanato* sp. nov., *E. rothi* and *E. xilitla* sp. nov., but differ from *E. rothi* and *E. xilitla* sp. nov. in having the AME as large as the PME, differ from *E. guanato* sp. nov. in having the posterior sclerite not distinctly dumbbell-shaped, and differ from *E. gertschi* in having the distal segment of the PLS not twice as long as the basal segment.

Description.—Essential information was provided by Roth (1968).

Distribution.—Reported from three states: Distrito Federal, Puebla and Tlaxcala (Mexico).

Comments.—The specimen from Guerrero differs to some extent morphologically from typical *E. tlaxcala* specimens (e.g. shape of RTA and median apophysis) and its identification remains doubtful.

Eratigena xilitla sp. nov.
http://zoobank.org/?lsid=urn:lsid:zoobank.org:act:A9F274FD-3456-4D7F-8A21-B9DF2B9B5DB8
Figs. 207–218

Type material.—*Holotype male*. MEXICO: *San Luis Potosí*: Xilitla, at road from Xilitla to Las Adjuntas, Cueva del Aqua, 451 m, near cave entranee at rock surfaces, 12 October 2014, A. Bolzern, E. González Santillán (FC-UNAM: AB1219: accession-nr. LN887161, LN887180)..

Paratypes. 1 ♀, 2 juv., same data as holotype (FC-UNAM: AB1219: accession-nr. LN887161, LN887180); 1 ♀, 4 juv., same data (NMB-ARAN-27527: AB1301).

Other material.—MEXICO: *Hidalgo*: 2 ♀, 2.5 km N. of junction Zacualtipan-Santiago Tianguistengo, 2101 m, pine forest, 6 November 2010, A. Valdez, O. Francke, J. Cruz, C. Santibáñez, E. Miranda (CNAN: AB1195). *Puebla*: 2 ♀, 1 juv., Ajalpan, street between Pala and Nicolás Bravo, 2653 m, oak-pine forest, at terrain break at steep slope near path in the forest, 7 October 2014, A. Bolzern, E. González Santillán (NMB-ARAN-27528 to 27529: AB1278, AB1287: accession-nr. LN887160, LN887179); 1 ♀, same data except 2619 m (FC-UNAM: AB1246). *San Luis Potosí*: 1 ♀, Tamazunchale, 6 July 1941, L.I. Davis (AMNH: AB1125). *Querétaro*: 1 ♀, 2 juv., Pinal de Amoles, at road 120 between Jalpan de Serra and Pinal de Amoles, close to La Curva del Chuveje, 20 km W. of Jalpan, 1288 m, transitional forest, subtropical to mountainous, in tube with running water under road, 13 October 2014, A. Bolzern, E. González Santillán (FC-UNAM: AB1235). *Veracruz*: 1 ♂, 4 ♀, 10 miles W. of Jalapa, volcanic cave in pine forest, 26 July 1956, V. Roth, W. Gertseh (AMNH: AB1164); 1 ♀, Acejete, 1 km NE. of La Joya, 2204 m, 30 October 2006, O. Francke, A. Valdez, C. Santibáñez (CNAN: AB1194); 1 ♂, 1 ♀, 2 juv., Coatepec, village park, 1265 m, 10 December 2010, S. Huber (NMB-ARAN-27530: AB1090); 1 ♂, Huatusco, 7 km E. of Huatusco, cloud forest, 22 June 1983, S. & J. Peck (AMNH: AB1136).

Etymology.—The specific name is a noun in apposition taken from the type locality.

Diagnosis.—Male and female specimens of *E. xilitla* sp. nov. are very similar to *E. rothi* and differ from all other West Nearctic *Eratigena* species in having the AME larger than the PME. They differ from the sister species, *E. rothi*, in their smaller size (CL shorter 4 mm; rather than longer than 4.5 mm in *E. rothi*). Males differ from *E. rothi* sp. nov. by the shape of the distal sclerite of the MA (Figs. 207, 209; spoon-shaped and rounded, rather than long subtriangular and pointed), and females differ by the shape of the posterior sclerite (Fig. 215).

Description.—*Measurements:* Male (holotype): CL 3.13, CW 2.47, STL 1.44, STW 1.36, OL 3.37, OW 1.7. Leg I (5.48, 1.33, 5.35, 6.15, 3.15), II (4.4, 1.1, 4.15, 4.95, 2.65), III (4.0, 1.0, 3.33, 4.5, 2.25), IV (5.35, 1.16, 4.75, 6.5, 3.33), Pedipalp (1.6, 0.54, 0.82, 1.36), bulbL 0.5. Female (paratype): CL 3.17, CW 2.4, STL 1.4, STW 1.36, OL 4.0, OW 2.9. Leg I (4.2, 1.1, 3.85, 4.0, 2.15), II (3.45, 1.08, 2.83, 3.1, 1.75), III (3.3, 1.0, 2.47, 3.1, 1.63), IV (4.22, 1.03, 3.5, 4.2, 2.03). Pedipalp (1.4, 0.54, 0.88, 1.32). EPL 0.31, EPW 0.67. Eyes: eye rows moderately procurved (Fig. 212). PME 0.16, PLE 0.18, AME 0.18, ALE 0.18. Eye distances: PME–PME 0.8 x PME, PME–AME 1 x PME, PME–PLE 1 x PME, PME–ALE 1.3 x PME, AME–AME 0.3 x AME, AME–ALE 0.3 x AME. CLY1 1.2 x AME, CLY2 1 x ALE. *Male pedipalp:* RTA with two branehes, lateral branch subtriangular lobe-like, moderately ventrad protruding, dorsal branch strongly finger shaped, distally truncated (Fig. 209). Short dorsal spike on palpal tibia absent. Embolus length about 1.4 x CB, originating at 9–10 o'clock position, distal tip at 3 o'clock position. Conductor lamelliform, distal portion only moderately elongated, lateral margin folded. Terminal end of conductor strongly elongated, pointed. Transversal ridge of conductor expressed as indistinct hyaline ridge. Conductor membranously connected to tegulum. MA originating at 6 o'clock position, protruding, longer than wide, distal sclerite spoon-shaped, rounded (Figs. 207–209). MA membranously connected to tegulum. *Epigyne and vulva*: Epigyne medially with a pale, hyaline area, long oval. Posterior sclerite protruding anteroventral as moderately sclerotized bar, dumbbell-shaped (Fig. 215), posterior membrane strongly protruding anteriad and notched (Fig. 218). CO anterolateral to posterior sclerite. Epigynal 'pseudo teeth' prominent (Fig. 215). Vulva consists of combined narrowly convoluted duct, CO less sclerotized with distinct appendages (Figs. 217, 218). FD only represented by small, leaf-shaped appendages. *Other important characters*: Cheliceral promargin with 4–5, retromargin with 7–11 small teeth, more proximally, the teeth become smaller. Colulus developed as trapezoidal plate with distal margin moderately w-shaped. PMS bearing one conspicuously prominent spigot. PLS with distal segment longer than basal segment (3/2; Fig. 214). Trichobothria on cymbium and palpal tarsus absent. Tarsal trichobothria at leg I 8. Small teeth on paired claws of leg I 8–9. Leg spination: male pedipalp (3-0-0 or 3-1-0, 2-0-0, 1-1+1p-0), female pedipalp (2-0-0, 2-0-0, 2-1+1p-0), leg femora (1-3-2-0 or 2-3-2-0, 1-3-2-0 or 2-3-2-0, 1-2-2-0, 1-2-2-0 or 2-1-1-0), patellae (all 2-0-0), tibiae (1-1-0-0, or 1-1-0-1, 1-1-0-0, 2-1-1-1, 2-2-1-1 or 2-2-2-1 or 2-2-2-2), metatarsi (0-0-0-1p+1+2p+1, 0-1-0-1p+1+2p+1, 0-2-2-1p+1+2p+1 or 0-3-2-4p+1, 0-3-2-4p+1 or 0-3-3-4p+1), tarsi (0, 0, 0-0-1-0 or 0-0-2-0, 0-1-2-0 or 0-1-3-0). *Coloration*: Carapace with two broad longitudinal symmetrical dark bands, margins narrowly to broadly darkened (Fig. 211). Sternum darkened, with pale median band with moderately serrated lateral margins (sometimes indistinct), posteriorly with indistinct black patch (Fig. 213). Opisthosoma dark brown, with distinct reddish median band with black spots, bordered by yellowish bands, posteriorly with yellowish chevrons (Fig. 211). Legs distinctly annulated, dorsally sometimes indistinct. Colulus laterally with dark patches. ALS basally and distally darkened, basal segment of PLS darkened, distal segment of PLS only proximal third darkened (Fig. 214).

Distribution.—Reported from five states along the eastern mountain range (Sierra Madre Oriental): Hidalgo, Puebla, Querétaro, San Luis Potosí, and Veracruz (Mexico).

Comments.—The specimens collected by Roth and Gertsch in 1956 were misidentified as *T. tlaxcala* (Roth, 1968: 25). See also comment for *E. rothi*.

DISCUSSION

The result that the endemic species in the Nearctic region belong to both genera, *Tegenaria* and *Eratigena*, is surprising. This hypothesis would imply that either both genera originated earlier than the split of Laurasia (approximately 55 million years ago; Ellis & Stoker 2014), or that one or both of them invaded the continent later.

The mexican *Eratigena* species can be split into the two described, well diagnosable groups: the *flexuosa*-group and the *mexicana*-group. Based on morphological data and mtDNA sequences, the *mexicana*-group is more complex with some very closely related species. Differences in male and female genitalia between species are sometimes hard to detect. That is why we even propose to use size as a character to separate species (Bolzern et al. 2013a). However, most species are well diagnosed by morphological and molecular data, although some specimen identifications remain uncertain due to the low number of available individuals (unknown magnitude of intraspecific variation) and the absence of molecular data for certain species.

In addition to the species groups in focus, it is mentionable that (based on mtDNA sequences; Fig. 1) *Textrix denticulata* (Olivier, 1789) is placed outside *Textrix* Sundevall, 1833, that *Agelena canariensis* Lucas, 1838 is closely related to *Agelescape gideoni* Levy, 1996 (and only distantly related to other *Agelena* Walckenaer, 1805 species), and that the *Novalena* Chamberlin & Ivie, 1942 specimens from Mexico represent a monophyletic clade apart from *Novalena intermedia* (Chamberlin & Gertsch, 1930).

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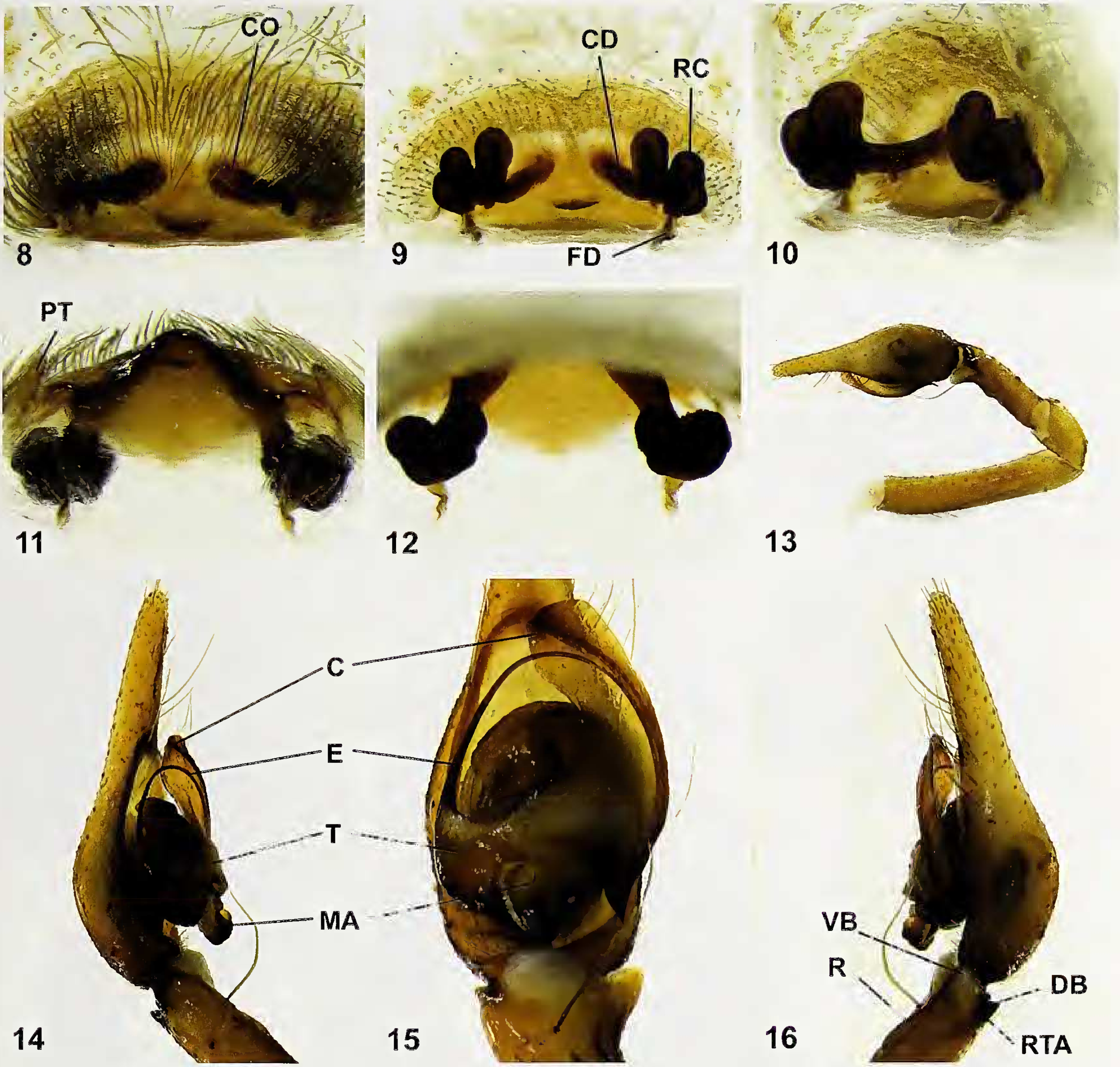


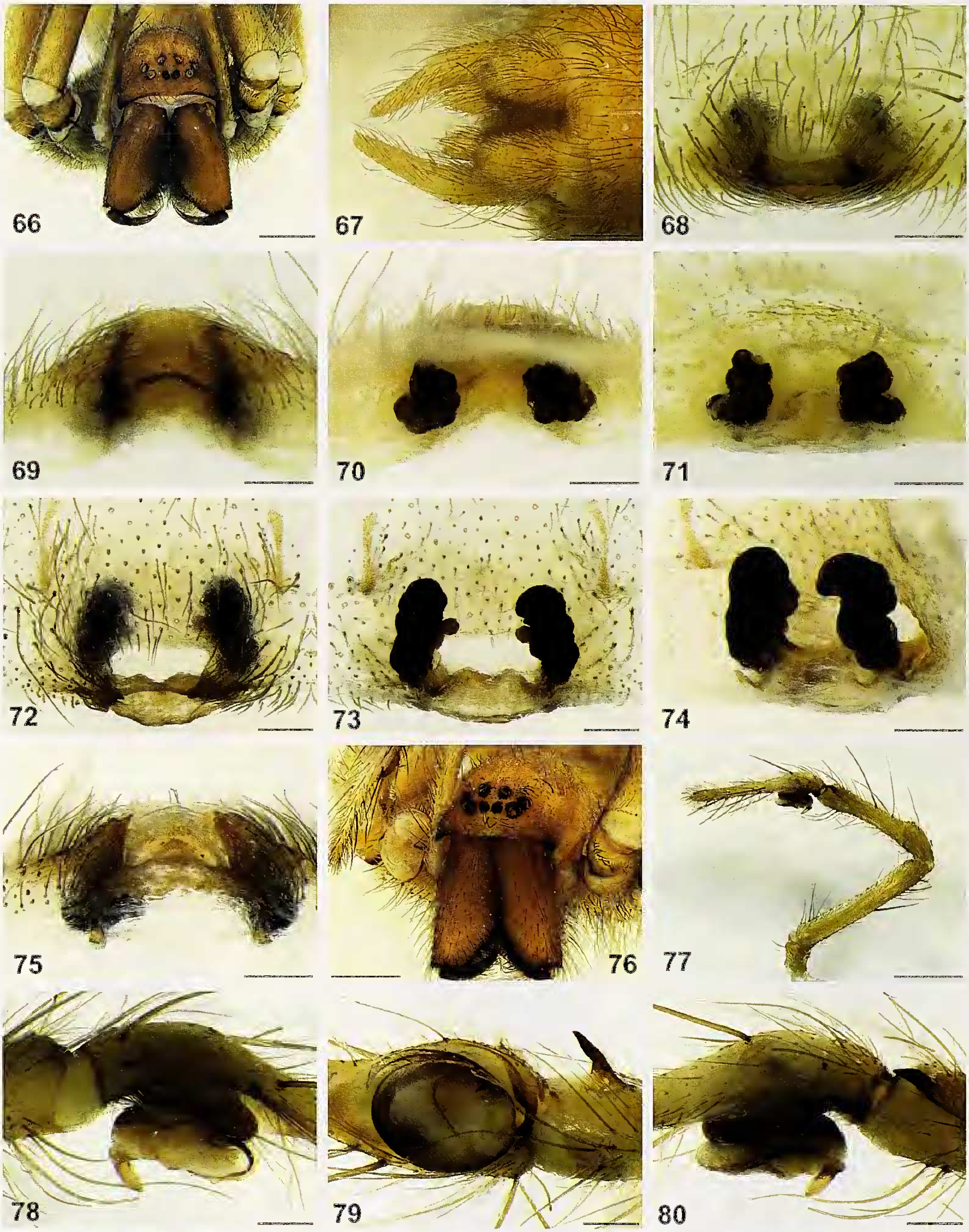
Figures 8–16.—*Tegenaria chiricahuae* Roth, 1968, female (8–12) and male (13–16). 8, epigynal area, ventral view; 9, vulva, dorsal view; 10, same, dorsolateral view; 11, same, posterior view; 12, same, anterior view; 13, left male pedipalp, dorsoretrolateral view; 14, cymbium and bulb, prolateral view; 15, same, ventral view; 16, same, retrolateral view. C = conductor; CD = copulatory duct; CO = copulatory opening; DB = dorsal branch of RTA; E = embolus; FD = fertilization duct; PT = epigynal 'pseudo teeth'; MA = median apophysis; R = lateroventral ridge of RTA; RC = receptaculum; RTA = retrolateral tibial apophysis; T = tegulum; VB = ventral branch of RTA.

Figures 17–29.—*Eratigena edmundoi* sp. nov., female (17–22) and male (23–29). 17, habitus, dorsal view; 18, epigynal area, ventral view; 19, vulva, dorsal view; 20, same, posterior view; 21, same, anterior view; 22, same, dorsolateral view; 23, carapace and chelicerae, anterior view; 24, sternum ventral view; 25, spinnerets, ventral view; 26, bulb, prolateral view; 27, same, ventral view; 28, same, retrolateral view; 29, left male pedipalp, retrolateral view. Scale of 17 = 2 mm; scale of 24 = 1 mm; scale of 23 = 0.5 mm; scale of other images = 0.2 mm. CD = copulatory duct; DP = distal portion of conductor; DS = distal sclerite at MA; FD = fertilization duct; PM = Posterior membrane; PS = posterior sclerite; PT = epigynal 'pseudo teeth'; RC = receptaculum; TR = transversal ridge at conductor.

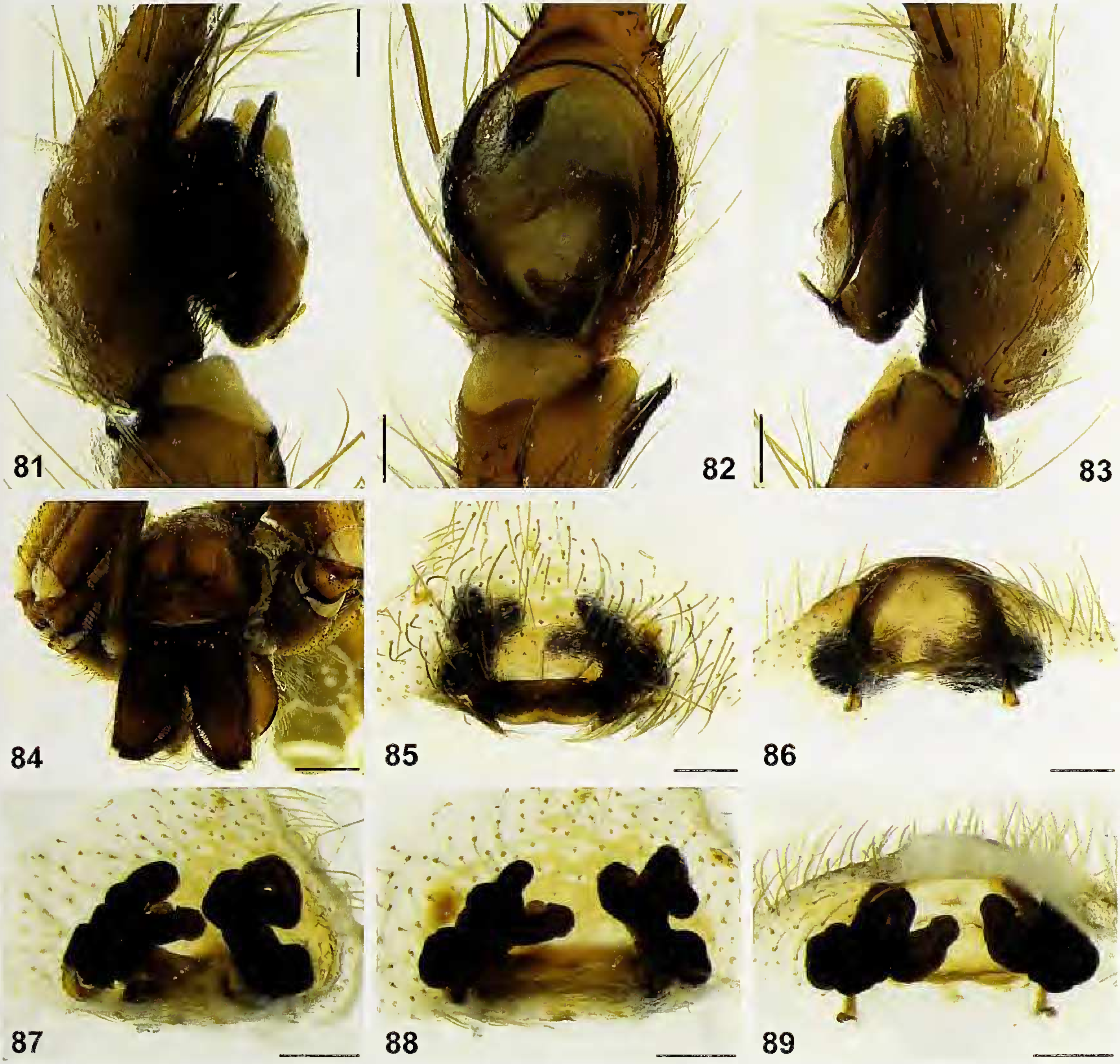
Figures 30–41.—*Eratigena flexuosa* (F.O. Pickard-Cambridge, 1902), male holotype (30–36) and female (37–41). 30, habitus, dorsal view; 31, sternum, ventral view; 32, spinnerets, ventral view; 33, cymbium and bulb, prolateral view; 34, same, ventral view; 35, same, retrolateral view; 36, chelicerae, posterior view; 37, carapace and chelicerae, anterior view; 38, epigynal area, ventral view; 39, vulva, posterior view; 40, same, anterior view; 41, same, dorsal view. Scale of 30 = 2 mm; scale of 31, 37 = 1 mm; scale of 32, 36 = 0.5 mm; scale of other images = 0.2 mm.

Figures 42–53.—*Eratigena florea* (Brignoli, 1974), female (42–46) and male (47–53). 42, epigynal area, ventral view; 43, vulva, anterior view; 44, same, dorsolateral view; 45, same, dorsal view; 46, same, variation (specimen labeled "prope" *florea* by Brignoli); 47, habitus, dorsal view; 48, carapace and chelicerae, anterior view; 49, sternum, ventral view; 50, spinnerets, ventral view; 51, cymbium and bulb, prolateral view; 52, same, ventral view; 53, same, retrolateral view. Scale of 47 = 2 mm; scale of 48–49 = 1 mm; scale of 50 = 0.5 mm; scale of other images = 0.2 mm.

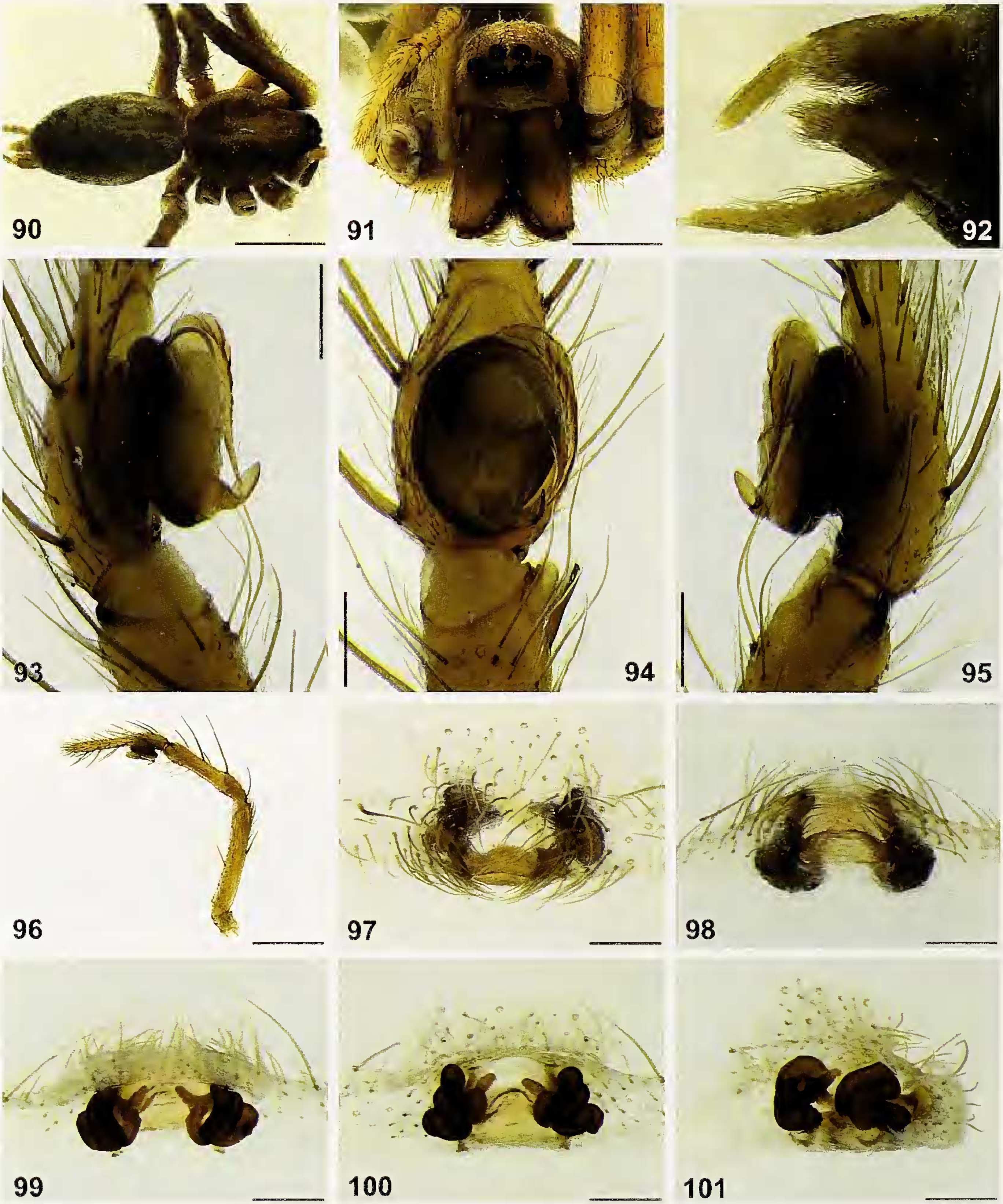
Figures 54–65.—*Eratigena yarini* sp. nov., female holotype (54–62) and male paratype (63–65). 54, habitus, dorsal view; 55, carapace and chelicerae, anterior view; 56, sternum, ventral view; 57, spinnerets, ventral view; 58, epigynal area, ventral view; 59, vulva, anterior view; 60, same, dorsolateral view; 61, same, dorsal view; 62, same, posterior view; 63, cymbium and bulb, prolateral view; 64, same, ventral view; 65, same, retrolateral view. Scale of 54 = 2 mm; scale of 55–56 = 1 mm; scale of 57 = 0.5 mm; scale of other images = 0.2 mm.



Figures 66–80.—*Eratigena blanda* (Gertsch, 1971), female holotype (66–71), and *Eratigena* cf. *gertschi*, female (72–75), and male (76–80). 66, carapace and chelicerae, anterior view; 67, spinnerets, ventral view; 68, epigynal area, ventral view; 69, vulva, posterior view; 70, same, anterior view; 71, same, dorsal view; 72, epigynal area, ventral view; 73, vulva, dorsal view; 74, same, dorsolateral view; 75, same, posterior view; 76, carapace and chelicerae, anterior view; 77, pedipalp, retrolateral view; 78, bulb, prolateral view; 79, same, ventral view; 80, same, retrolateral view. Scale of 66, 76–77 = 1 mm; scale of 67 = 0.5 mm; scale of other images = 0.2 mm.

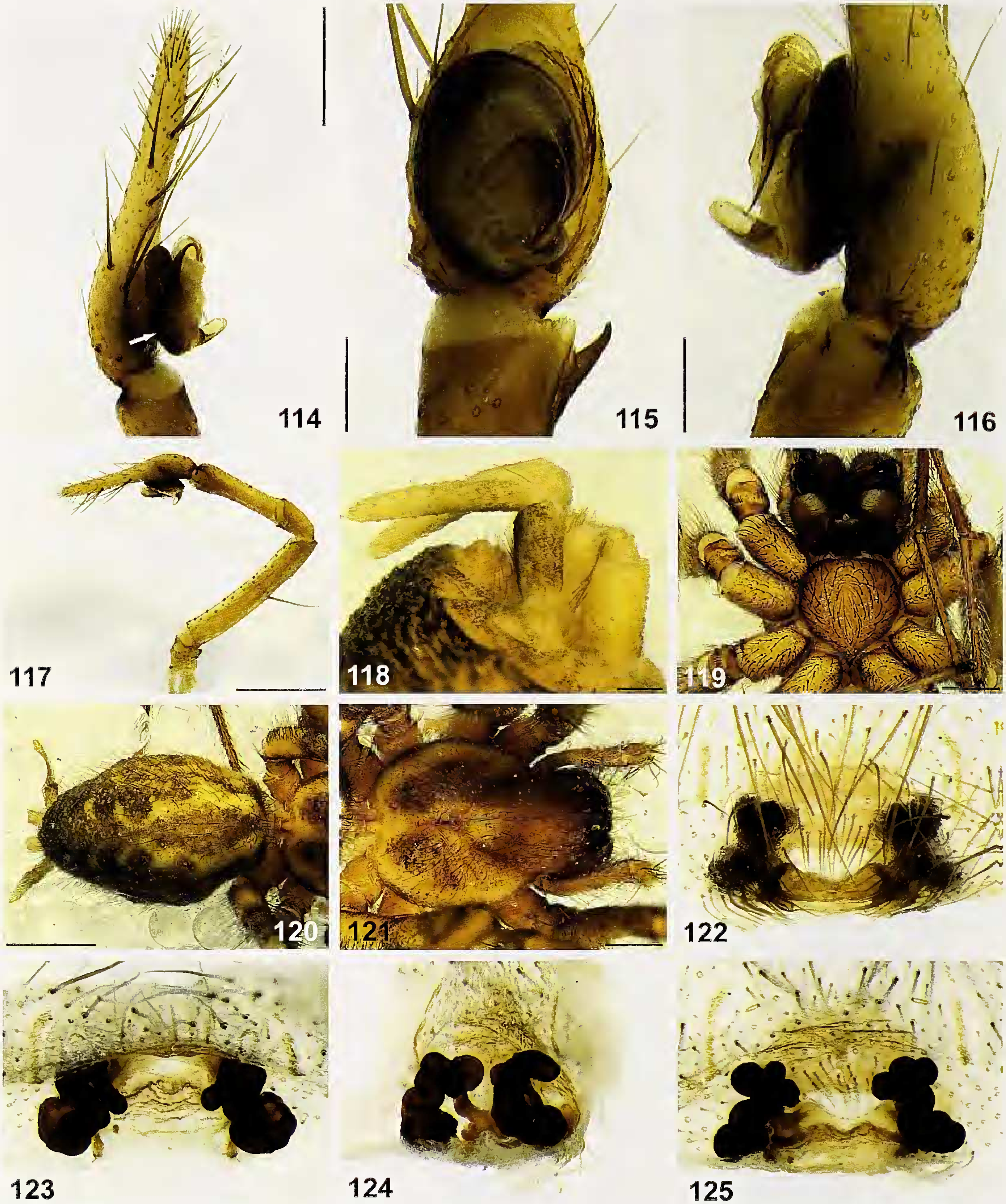


Figures 81–89.—*Eratigena caverna* (Gertsch, 1971), male holotype (81–84) and female allotype (85–89). 81, bulb, prolateral view; 82, same, ventral view; 83, same, retrolateral view; 84, carapace and chelicerae, anterior view; 85, epigynal area, ventral view; 86, vulva, posterior view; 87, same, dorsolateral view; 88, same, dorsal view; 89, same, anterior view. Scale of 84 = 1 mm; scale of other images = 0.2 mm.



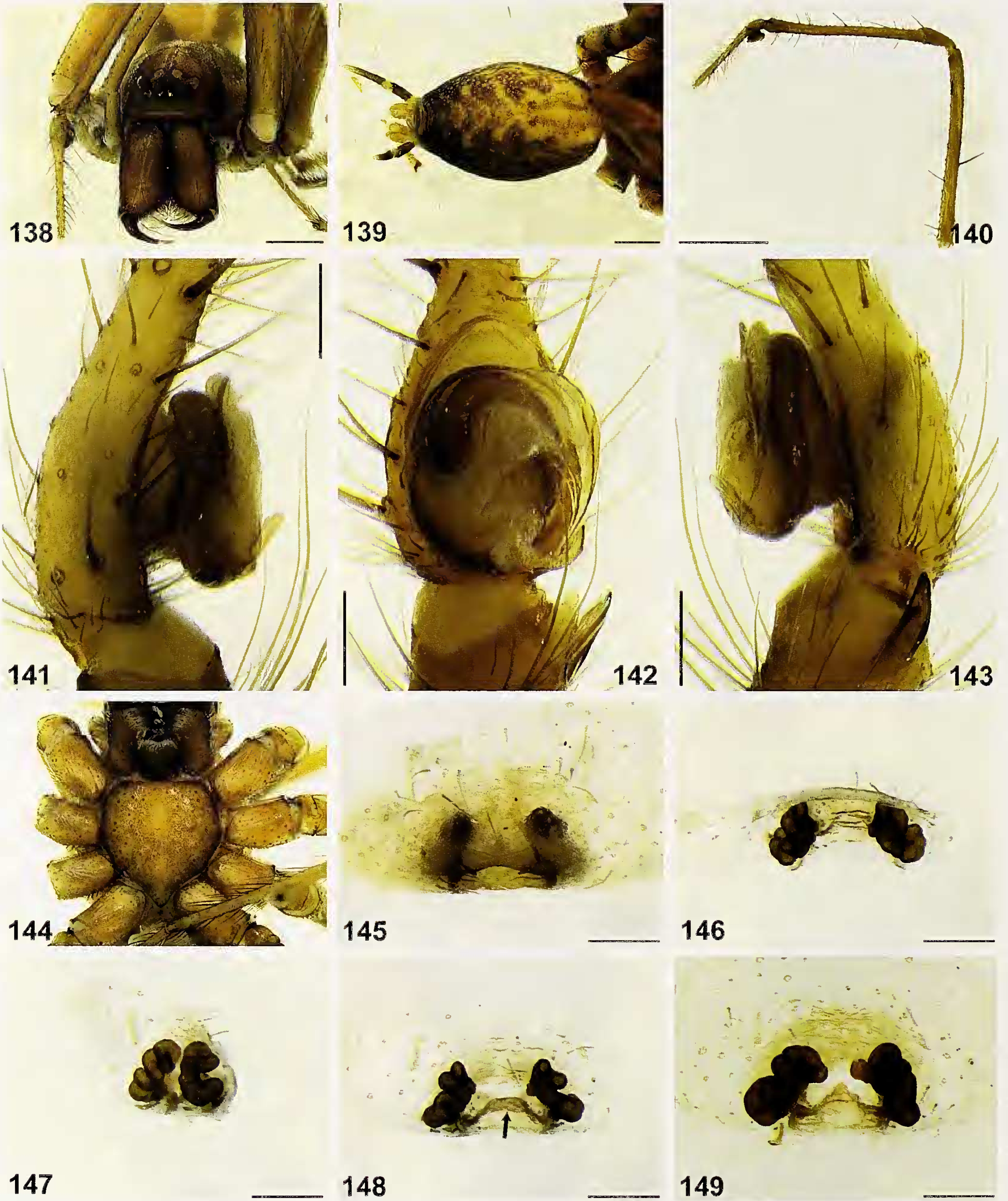
Figures 90–101.—*Eratigena decora* (Gertsch, 1971), male holotype (90–96) and female paratype (97–101). 90, habitus, dorsal view; 91, carapace and chelicerae, anterior view; 92, spinnerets, ventral view; 93, bulb, prolateral view; 94, same, ventral view; 95, same, retrolateral view; 96, pedipalp, retrolateral view; 97, epigynal area, ventral view; 98, vulva, posterior view; 99, same, anterior view; 100, same, dorsal view; 101, same, dorsolateral view. Scale of 90 = 2 mm; scale of 91, 96 = 1 mm; scale of other images = 0.2 mm.

Figures 102–113.—*Eratigena fernandoi* sp. nov., female paratype (102–108) and male holotype (109–113). 102, carapace and chelicerae, anterior view; 103, sternum, ventral view; 104, spinnerets, ventral view; 105, epigynal area, ventral view; 106, vulva, dorsal view; 107, same, anterior view; 108, same, posterior view; 109, habitus, dorsal view; 110, pedipalp, retrolateral view; 111, bulb, prolateral view; 112, same, ventral view; 113, same, retrolateral view. Scale of 109 = 2 mm; scale of 102–103 = 1 mm; scale of 104, 110 = 0.5 mm; scale of other images = 0.2 mm.



Figures 114–125.—*Eratigena gertschi* (Roth, 1968), male holotype (114–118) and female (119–125). 114, cymbium and bulb, prolateral view; 115, bulb, ventral view; 116, same, retrolateral view; 117, pedipalp, same; 118, spinnerets, lateral view; 119, sternum, ventral view; 120, abdomen, dorsal view; 121, carapace, same; 122, epigynal area, ventral view; 123, vulva, anterior view; 124, same, dorsolateral view; 125, same, dorsal view. Scale of 120 = 2 mm; scale of 117, 119 = 1 mm; scale of 114 = 0.5 mm; scale of other images = 0.2 mm.

Figures 126–137.—*Eratigena guanato* sp. nov., female paratype (126–134), and male (135–137). 126, habitus, dorsal view; 127, carapace and chelicerae, anterior view; 128, sternum, ventral view; 129, spinnerets, ventral view; 130, epigynal area, ventral view; 131, same; 132, vulva, anterior view; 133, same, dorsolateral view; 134, same, dorsal view; 135, bulb, prolateral view; 136, same, ventral view; 137, same, retrolateral view. Scale of 126 = 2 mm; scale of 127–128 = 1 mm; scale of other images = 0.2 mm.

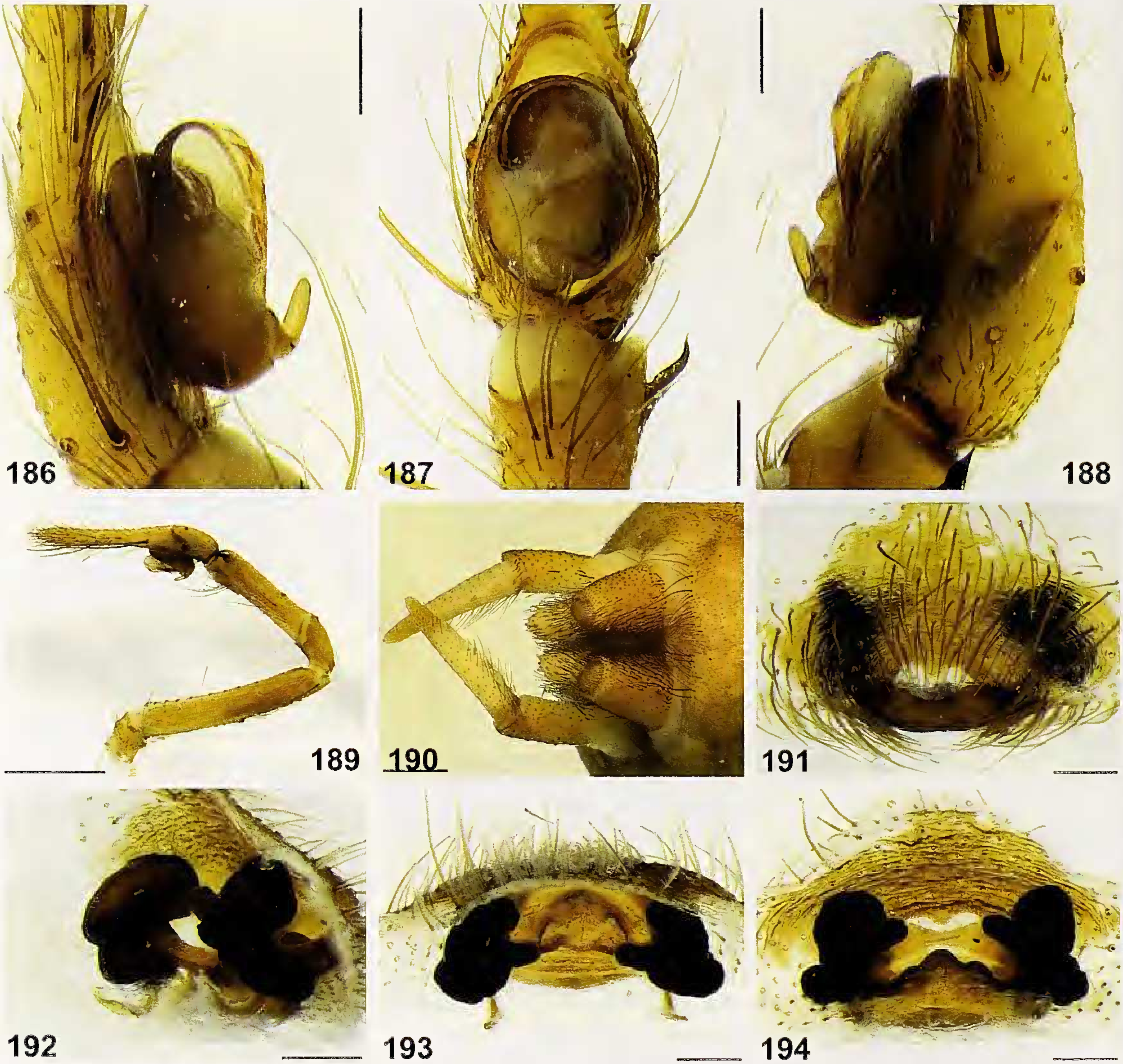


Figures 138–149.—*Eratigena mexicana* (Roth, 1968), male holotype (138–143) and female (144–148). *Eratigena* cf. *mexicana*, female (149) . 138, carapace and chelicerae, anterior view; 139, abdomen, dorsal view; 140, pedipalp, retrolateral view; 141, bulb, prolateral view; 142, same, ventral view; 143, same, retrolateral view; 144, sternum, ventral view; 145, epigynal area, ventral view; 146, vulva, anterior view; 147, same, dorsolateral view; 148, same, dorsal view; 149, same. Scale of 139–140 = 2 mm; scale of 138, 144 = 1 mm; scale of other images = 0.2 mm.

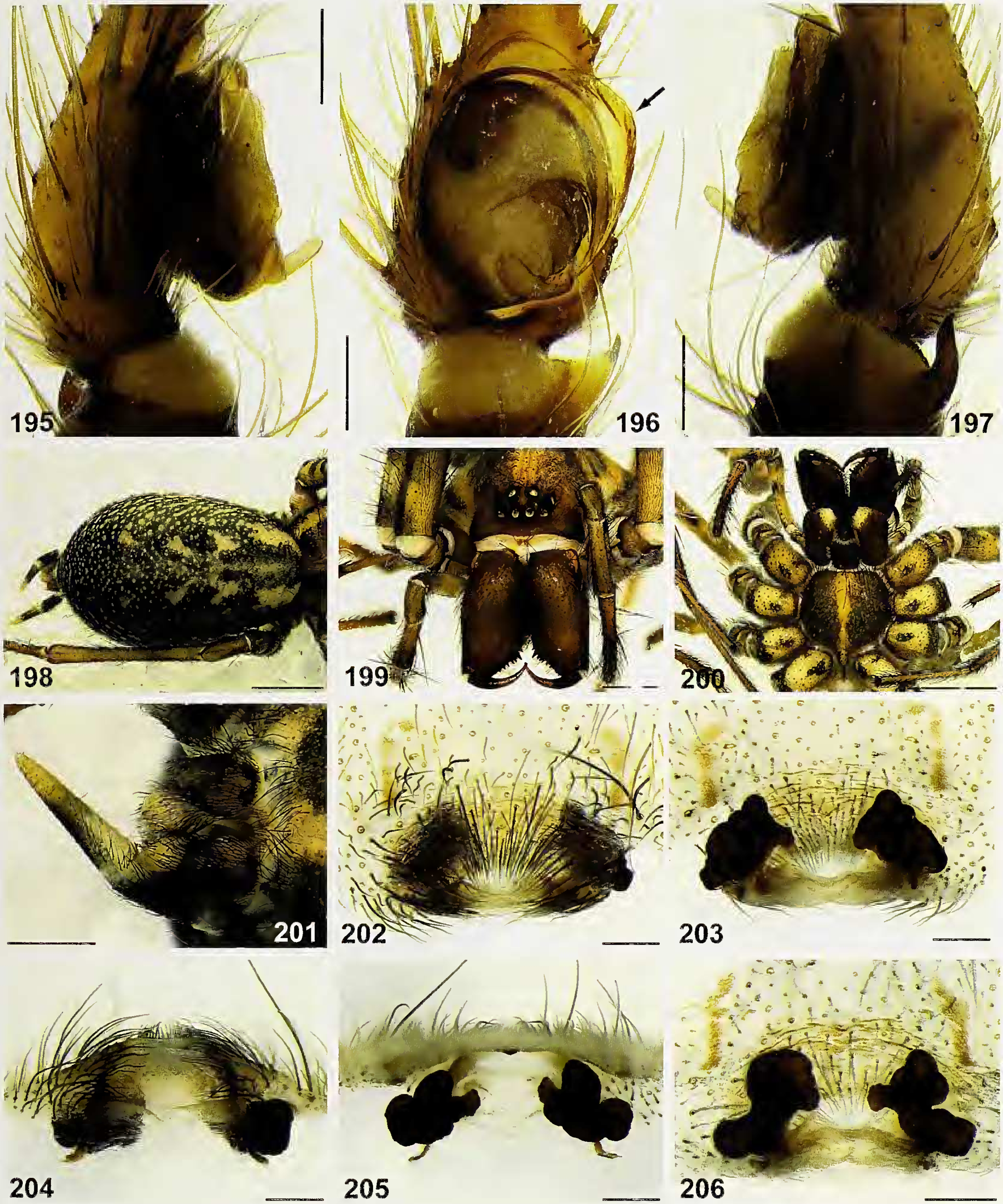
Figures 150–161.—*Eratigena queretaro* sp. nov., female holotype (150–153, 155–158), female paratype (154), and male paratype (159–161). 150, habitus, dorsal view; 151, carapace and chelicerae, anterior view; 152, sternum, ventral view; 153, spinnerets, ventral view; 154–155, epigynal area, ventral view; 156, vulva, posterior view; 157, same, anterior view; 158, same, dorsal view; 159, bulb, prolateral view; 160, same, ventral view; 161, same, retrolateral view. Scale of 150 = 2mm; scale of 151–152 = 1 mm; scale of 153 = 0.5 mm; scale of other images = 0.2 mm.

Figures 162–173.—*Eratigena rothi* (Gertsch, 1971), male holotype (162–169), and female (170–173). 162, abdomen, dorsal view; 163, carapace, same; 164, carapace and chelicerae, anterior view; 165, cymbium and bulb, prolateral view; 166, bulb, ventral view; 167, same, retrolateral view; 168, sternum, ventral view; 169, spinnerets, ventral view; 170, epigynal area, same; 171, vulva, anterior view; 172, same, posterior view; 173, same, dorsal view. Scale of 162–164, 168 = 1 mm; scale of 165, 169 = 0.5 mm; scale of other images = 0.2 mm.

Figures 174–185.—*Eratigena selva* (Roth, 1968), male holotype (174–178), female (AB1158, 179–185). 174, bulb, prolateral view; 175, same, ventral view; 176, same, retrolateral view; 177, carapace and chelicerae, anterior view; 178, pedipalp, retrolateral view; 179, sternum, ventral view; 180, abdomen, dorsal view; 181, spinnerets, ventral view; 182, epigynal area, ventral view; 183, vulva, posterior view; 184, same, anterior view; 185, same, dorsal view. Scale of 177–178, 180 = 2 mm; scale of 179 = 1 mm; scale of 181 = 0.5 mm; scale of other images = 0.2 mm.



Figures 186–194.—Variation of *Eratigena selva* (Roth, 1968), male (186–189), and female (190–194) from Sotano de Golondrina (AB1151). 186, bulb, prolateral view; 187, same, ventral view; 188, same, retrolateral view; 189, pedipalp, same; 190, spinnerets, ventral view; 191, epigynal area, ventral view; 192, same, dorsolateral view; 193, same, anterior view; 194, same, dorsal view. Scale of 189 = 1 mm; scale of 190 = 0.5 mm; scale of other images = 0.2 mm.



Figures 195–206.—*Eratigena tlaxcala* (Roth, 1968), male holotype (195–197), and female (198–207). 195, bulb, prolateral view; 196, same, ventral view; 197, same, retrolateral view; 198, abdomen, dorsal view; 199, carapace and chelicerae, anterior view; 200, sternum, ventral view; 201, spinnerets, ventral view; 202, epigynal area, ventral view; 203, vulva, dorsal view; 204, same, posterior view; 205, same, anterior view; 206, same, variation, dorsal view. Scale of 198, 200 = 2 mm; scale of 199 = 1 mm; scale of 201 = 0.5 mm; scale of other images = 0.2 mm.

Figures 207–218.—*Eratigena xilitla* sp. nov., male holotype (207–210), and female paratype (211–218). 207, bulb, prolateral view; 208, same, ventral view; 209, same, retrolateral view; 210, pedipalp, same; 211, habitus, dorsal view; 212, carapace and chelicerae, anterior view; 213, sternum, ventral view; 214, spinnerets, same; 215, epigynal area, same; 216, vulva, posterior view; 217, same, anterior view; 218, same, dorsal view. Scale of 211 = 2 mm; scale of 212–213 = 1 mm; scale of 210, 214 = 0.5 mm; scale of other images = 0.2 mm.

LITERATURE CITED

Bolzern, A. 2014. Agelenids of the World. Accessed 30 October 2015. Online at http://agelenidsoftheworld.myspecies.info

Bolzern, A., & C. Hervé. 2010. A new funnel-web spider species (Araneae: Agelenidae, *Tegenaria*) from Mercantour National Park, France. Arachnology 15:21–26.

Bolzern, A., D. Burckhardt & A. Hänggi. 2013a. Phylogeny and taxonomy of European funnel-web spiders of the *Tegenaria–Malthonica* complex (Araneae: Agelenidae) based upon morphological and molecular data. Zoological Journal of the Linnean Society 168:723–848.

Bolzern, A., L. Crespo & P.B. Cardoso. 2009. Two new *Tegenaria* species (Araneae: Agelenidae) from Portugal. Zootaxa 2068:47–58.

Bolzern, A., A. Hänggi & D. Burckhardt. 2010. *Aterigena*, a new genus of funnel-web spider, shedding some light on the *Tegenaria-Malthonica* problem (Araneae: Agelenidae). Journal of Arachnology 38:162–182.

Bolzern, A., P. Pantini & M. Isaia. 2013b. Revision of the *Histopona italica* group (Araneae: Agelenidae), with the description of two new species. Zootaxa 3640:23–41.

Bosmans, R. 2011. On some new or rare spider species from Lesbos, Greece (Araneae: Agelenidae, Amaurobiidae, Corinnidae, Gnaphosidae, Liocranidae). Arachnologische Mitteilungen 40:15–22.

Brignoli, P. 1974. Notes on spiders, mainly cave-dwelling, of southern Mexico and Guatemala (Araneae). Quaderno Accademia Nazionale dei Lincei 171:195–238.

Ellis, D. & M.S. Stoker. 2014. The Faroe-Shetland Basin: a regional perspective from the Paleocene to the present day and its relationship to the opening of the North Atlantic Ocean. Geological Society, London, Special Publications 397:1–21.

Folmer, O., M. Black, W. Hoeh, R. Lutz, R. Vrijenhoek. 1994. DNA primers for amplification of mitochondrial cytochrome C oxidase subunit I from diverse metazoan invertebrates. Molecular Marine Biology and Biotechnology 3:294–299.

Gertsch, W. 1971. A report on some Mexican cave spiders. Association for Mexican Cave Studies Bulletin 4:47–111.

Goloboff, P., J. Farris & K. Nixon. 2008. TNT, a free program for phylogenetic analysis. Cladistics 24:774–786.

Hedin, M.C. & W.P. Maddison. 2001. A combined molecular approach to phylogeny of the jumping spider subfamily Dendryphantinae (Araneae: Salticidae). Molecular Phylogenetics and Evolution 18:386–403.

Kluge, N.J. 2007. Case 3371. ARANEIDAE Clerck, 1758, *Araneus* Clerck, 1758 and *Tegenaria* Latreille, 1804 (Arachnida, Araneae): proposed conservation. Bulletin of Zoological Nomenclature 64:15–18.

Larkin, M.A., G. Blackshields, N.P. Brown, R. Chenna, P.A. McGettigan, H. McWilliam et al. 2007. Clustal W and Clustal X version 2.0. Bioinformatics 23:2947–2948.

Li, W., A. Cowley, M. Uludag, T. Gur, H. McWilliam, S. Squizzato et al. 2015. The EMBL-EBI bioinformatics web and programmatic tools framework. Nucleic Acids Research 210:1–5.

Maddison, W.P. & D.R. Maddison. 2015. Mesquite: a modular system for evolutionary analysis. Version 3.03. Online at http://mesquiteproject.org

Maya-Morales, J. & M.L. Jiménez. 2013. *Rothilena* (Araneae: Agelenidae), a new genus of funnel-web spiders endemic to the Baja California Peninsula, Mexico. Zootaxa 3718:441–466.

Miller, J.A., A. Carmichael, M.J. Ramírez, J.C. Spagna, C.R. Haddad, M. Rezác et al. 2010. Phylogeny of entelegyne spiders: affinities of the family Penestomidae (NEW RANK), generic phylogeny of Eresidae, and asymmetric rates of change in spinning organ evolution (Araneae, Araneoidea, Entelegynae). Molecular Phylogenetics and Evolution 55:786–804.

Miller, M.A., W. Pfeiffer & T. Schwartz. 2010. Creating the CIPRES Science Gateway for inference of large phylogenetic trees. Proceedings of the Gateway Computing Environments Workshop (GCE), 14 Nov. 2010, New Orleans, LA:1–8.

Murphy, N.P., V.W. Framenau, S.C. Donnellan, M.S. Harvey, Y.-C. Park & A.D. Austin. 2006. Phylogenetic reconstruction of the wolf spiders (Araneae: Lycosidae) using sequences from the 12S rRNA, 28S rRNA, and NADH1 genes: implications for classification, biogeography, and the evolution of web building behavior. Molecular Phylogenetics and Evolution 38:583–602.

Pickard-Cambridge, F.O. 1902. Arachnida - Araneidae and Opiliones. Vol. II. *In* Biologia Centrali-Americana, Zoology. London.

Roth, V.D. 1952. A review of the genus *Tegenaria* in North America (Arachnida: Agelenidae). Journal of the Washington Academy of Science 42:283–288.

Roth, V.D. 1956. Taxonomic changes in the Agelenidae (Arachnida). The Pan-Pacific Entomologist 32:175–180.

Roth, V.D. 1968. The spider genus *Tegenaria* in the Western Hemisphere (Agelenidae). American Museum Novitates 2323:1–33.

Simon, C., F. Frati, A. Beckenbach, B. Crespi, H. Liu & P. Flook. 1994. Evolution, weighting, and phylogenetic utility of mitochondrial gene sequences and a compilation of conserved polymerase chain reaction primers. Annals of the Entomological Society of America 87:651–701.

Sukumaran, J. & M.T. Holder. 2010. DendroPy: a Python library for phylogenetic computing. Bioinformatics 26:1569–1571.

Sukumaran, J. & M.T. Holder. 2015. SumTrees: phylogenetic tree summarization. Version 4.0.0. Online at https://github.com/jeetsukumaran/DendroPy

Tamura, K., G. Stecher, D. Peterson, A. Filipski & S. Kumar. 2013. MEGA6: Molecular Evolutionary Genetics Analysis version 6.0. Molecular Biology and Evolution 30:2725–2729.

Wheeler, T.J. & J.D. Kececioglu. 2007. Multiple alignment by aligning alignments. Bioinformatics 23:i559–i568.

World Spider Catalog. 2015. World Spider Catalog version 16.5. Accessed 25 October 2015. Natural History Museum, Bern. Online at http://wsc.nmbe.ch

Zwickl, D.J. 2006. Genetic algorithm approaches for the phylogenetic analysis of large biological sequence datasets under the maximum likelihood criterion. Ph.D. dissertation, The University of Texas at Austin. 115 pp.

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